



Computing Curriculum Progression

Intent:

At Eggescliffe Primary School, our high-quality computing curriculum will allow our pupils to develop into independent and confident learners who are able to use their wide range of computational skills to understand and participate in an increasingly digital world. Our balanced coverage of computer science, information technology and digital literacy will provide opportunities for children to investigate, question and explore new technologies and applications on their journey to becoming creative planners, problem solvers and critical thinkers. It will excite, inspire and awaken them to the important role of computers in their daily lives, and also to the far-reaching possibilities of computing in the wider world as a force for positive change. Computing at Eggescliffe will enable our children to confidently walk into their future as digital citizens in a world which is shaped by ever-evolving technology.

Implementation:

Our Computing curriculum is designed to expose students to a variety of software, programs, and equipment in order to develop skills and knowledge in the three core areas of Computing:

- Computer Science – the understanding of coding and programming across a range of physical devices and digital resources.
- Information Technology – the range of skills required to operate and manipulate specific programs, systems, and content.
- Digital Literacy – the knowledge required to use technology safely and to evaluate and react to any potential risks of the online/digital world.

A clear and effective cross curricular scheme of work through Kapow Primary provides coverage in line with the National Curriculum. Kapow Primary units of work also have teacher support videos that act as mini CPD sessions to help support teachers in the planning and teaching of a unit of work. Other units of work are developed and adapted to suit the progression of information technology, including the development of word processing and data handling on laptops and tablets. E-safety is discretley taught across school and is embedded into the curriculum to ensure children have the opportunity to explore and respond to key issues such as digital communication, cyber-bullying, online safety, security, plagiarism and social media. We also participate in 'Safer Internet Day' in which each class accesses tasks and information on e-safety. The use of Computing skills is encouraged across the wider curriculum to allow children to apply their learning in a different context and to allow for opportunities for the safe use of digital systems.

Impact:

The impact of our Computing curriculum is to encourage our children to enjoy and value the curriculum we deliver to become confident digital citizens. We want learners to discuss, reflect and appreciate the impact Computing has on their learning, development and well being. Finding the right balance with technology is key to an effective education and a healthy life-style. We feel the way we implement Computing helps children realise the need for the right balance and one they can continue to build on in their next stage of education and beyond. We encourage regular discussions between staff and pupils to best embed and understand this. The way pupils showcase, share, celebrate and publish their work will best show the impact of our curriculum. We also look for evidence through reviewing pupil's knowledge and skills digitally through tools like One Drive and the School Shared Drive and through pupil voices. Progress of our computing curriculum is demonstrated through outcomes and the record of coverage in the process of achieving these outcomes.

National Curriculum Expectations:

EYFS:	Key Stage One:	Key Stage Two:
<p>Despite computing not being explicitly mentioned within the Early Years Foundation Stage (EYFS) statutory framework, which focuses on the learning and development of children from birth to age five, there are many opportunities for young children to use technology to solve problems and produce creative outcomes. In particular, many areas of the framework provide opportunities for pupils to develop their ability to use computational thinking effectively.</p>	<p>Pupils should be taught:</p> <ul style="list-style-type: none"> • to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • to create and debug simple programs • to use logical reasoning to predict the behaviour of simple program • to use technology purposefully to create, organise, store, manipulate and retrieve digital content • to recognise common uses of information technology beyond school • 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 	<p>Pupils should be taught:</p> <ul style="list-style-type: none"> • to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • to use sequence, selection, and repetition in programs; work with variables and various forms of input and output • to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • to 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 • to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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, including collecting, analysing, evaluating and presenting data and information • to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
<p>The national curriculum for Computing aims to ensure that all pupils by the end of year 6:</p>		
<ul style="list-style-type: none"> • can understand and apply the principles and concepts of computer science, including abstraction, logic, algorithms and data representation. • can safely navigate the internet and social media whilst being aware of the positives and negatives of the world wide web. 		

Information Technology		Year One	Year Two
		Word Processing and Presenting	<ul style="list-style-type: none"> • Use a keyboard to enter text • Begin to understand storage is where work/learning is saved • Confidently type words quickly and correctly on a digital device • Can use the space bar to make space and delete to delete letters/words • Make a new line using enter/return
Data Handling	<ul style="list-style-type: none"> • Talk about the different ways in which information can be shown • Collect, find and sort information /photos/ videos and sound and present it to other people • Add information to a pictograph/simple graph and talk about what it means • Record themselves explaining what they have done and what it shows • Sort images or text into two or more categories on a digital device 	<ul style="list-style-type: none"> • Talk about the different ways to collect information, including digital devices • Create simple mind maps and branching diagrams using questions (paper or electronic) • Use technology to present and organise information • Collect and input data into a spreadsheet • Orally record themselves explaining what the data shows 	

	Wider use of technology	<ul style="list-style-type: none"> • Begin to identify some benefits of using technology • Talk about the different ways in which information can be shown • Recognise common uses of technology at home and at school • Use simple keywords in a search engine • Search for and download/save images from the Internet safely 	<ul style="list-style-type: none"> • Talk about and explore how ideas can be shared online (school website, twitter) • Identify how technology is used in the wider world and why we use it at home and in the classroom • Use keywords in search engines • Demonstrate how to navigate a simple webpage to get information (home, back, tabs, links) • Explain what voice activated searching is and how it might be used (Alexa, Siri)
	Digital Media	<ul style="list-style-type: none"> • Take a photo and edit it with simple tools • Create an animation to tell a story • Record a film using the camera app • Create a digital image • Interact with AR objects • Explore an interactive 360 image 	<ul style="list-style-type: none"> • Create a simple stop motion animation and explain how it works • Use tools to add effects to a video • Begin to use green screen techniques with support • Edit a photo (crop, filter, mark up) • Create a QR code • Bring objects into their surroundings using AR

Digital Literacy (E-Safety)	Privacy, Security & Ownership	<ul style="list-style-type: none"> • Know the importance of a password and the need to keep it private • Log in and out and save work on their account or device • Give examples of information that is personal to them (address, school) • Explain why work they create belongs to them • Recognise that information can stay online and be copied 	<ul style="list-style-type: none"> • Explain what passwords are and the need to keep a password safe • Understand that other people have created the information we use online • Explain how online information about them could be seen by others • Explain some rules for keeping their information private • Describe why other people's work belongs to them • Save work so that others know who it belongs to
	E-safety	<ul style="list-style-type: none"> • When using the internet, children can explain what to do if they come across something online that worries them or makes them feel uncomfortable • Recognise age appropriate websites • Agree and follow sensible e-safety rules • Explain why it is important to be considerate and kind to people online • Explain the importance of asking a trusted adult before sharing information online 	<ul style="list-style-type: none"> • Understand what to do if they come across something online that worries them or makes them feel upset • Explain why it is important to be kind to others online and in real life • Begin to understand how other people's identity online can be different to their identity in real life • Give examples of what bullying behaviour may look like online and how to get help

Computer Science	Hardware & Networks	<ul style="list-style-type: none"> • Learn how to explore and tinker with hardware to find out how it works • Understand that computers and devices around us use inputs and outputs, identifying some of these • Learn where keys are located on the keyboard 	<ul style="list-style-type: none"> • Understand what a computer is and how it is made up of different components • Recognise that buttons cause effects and that technology follows instructions • Developing confidence with the keyboard
	Programming	<ul style="list-style-type: none"> • Give instructions and follow instructions to move around (blue-bot) • Describe what happens when they press buttons on a device • Describe the actions they need to do in order to make something happen, using the word 'algorithm' • Use the word 'debug' when correcting mistakes • Understand that decomposition means breaking a problem down into smaller parts 	<ul style="list-style-type: none"> • Predict what will happen when a new instruction is given • Give instructions to someone (forward, backwards turn) • Test and debug a set of instructions written by themselves • Use an algorithm to write a basic computer program (kodable) • Decompose a game to predict the algorithms used to create it • Begin to know that abstraction is the representation of information through less complexity

Information Technology		Year Three	Year Four	Year Five	Year Six
		Word Processing and Presenting	<ul style="list-style-type: none"> • Use appropriate keyboard commands and emoticons • Combine a mixture of text, graphics and sound to share ideas and learning • Edit the style and effect of text and images to make a document more engaging (borders, shading) • Use cut, copy and paste to quickly duplicate and organise text • Create a simple digital timeline/mind-map 	<ul style="list-style-type: none"> • Use a variety of media to create an atmosphere when presenting to others (posters, documents, eBooks) • Change the appearance of text to match a particular purpose • Give constructive feedback to others to improve their work • Confidently use text shortcuts such as cut, copy, paste and delete to organise text • Create a digital timeline/mind map and include sound and video 	<ul style="list-style-type: none"> • Use a variety of media editing tools to refine and enhance own work • Combine a variety of technology tools to create greater effects (sound) • Review and improve own work and support others • Organise text on screen to suit a purpose • Create and export an interactive presentation
Data Handling	<ul style="list-style-type: none"> • Talk about the different ways data can be organised • Search a database/bank of data to answer a question • Create a branching database/sorting diagram/flowchart • Understand the vocabulary associated with databases: field, record, data • Start to input simple data into a spreadsheet 	<ul style="list-style-type: none"> • Plan, create and search a database • Organise data in different ways • Choose the best way to present data to others • Design a weather station which gathers and records sensor data • Input data into a spreadsheet and export the data in a bar chart or pie chart 	<ul style="list-style-type: none"> • Talk about mistakes in data and suggest how it can be checked • Choose appropriate tools to collect data and present data to others • Understand how data is collected • Create and publish an online questionnaire and analyse the results 	<ul style="list-style-type: none"> • Plan a process to collect data, check for reliability and accuracy and then present it using appropriate tools • Interpret the data collected • Gather and analyse data in real time (questionnaire/quiz) • Create formulas and sort data within spreadsheets • Understand how barcodes, QR codes and RFID (tags) work 	

Wider use of technology	<ul style="list-style-type: none"> • Save, share and retrieve work on the internet, school network and on other devices • Use search tools and key phrases to find and use appropriate websites • Explain how the internet can be used to buy and sell things 	<ul style="list-style-type: none"> • Know that information on the World Wide Web may not always be reliable • Identify key words when searching on the World Wide Web • Understand that software can be used collaboratively online to work as a team 	<ul style="list-style-type: none"> • Know how to search for information on the World Wide Web and check its reliability • Use different online communication tools appropriately for the purpose • Evaluate digital content and how they make choices from search results 	<ul style="list-style-type: none"> • Know that search results have been selected and ranked according to their reliability and relevance • Can explain and select the appropriate communication tools that are best fit for purpose • Understand how search engines work • Use search technologies safely and effectively
	Digital Media	<ul style="list-style-type: none"> • Use software to edit and enhance a video adding music, sounds and text on screen with transitions • Independently create a green screen clip • Create a movie trailer • Create a digital image using a range of tools, pens, brushes and effects 	<ul style="list-style-type: none"> • Design and create a webpage for a given purpose • Add music and sound effects to a film • Add animated titles and transitions • Confidently use green screen adding an animated background • Enhance digital images/photographs using crop, brightness, contrast and resize 	<ul style="list-style-type: none"> • Plan, create and test a quiz • Use animation software: Stop Motion to create a video animation • Identify ways to improve and edit final products • Add green screen effects to a stop motion animation • Create a flipbook animation

Digital Literacy (E-Safety)	Privacy, Security & Ownership	<ul style="list-style-type: none"> • Talk about what makes a secure password • Understand and can give reasons why passwords are important • Give reasons why they should only share information with people they choose to and can trust. • Explain why copying someone else's work from the internet without permission can cause problems and can give examples of these problems 	<ul style="list-style-type: none"> • Choose secure passwords and know the importance of changing them regularly • Recognise that anything posted online can be seen by others • Describe strategies for keeping personal information private • Explain how internet usage can be monitored • When searching for information online, they can explain why they need to consider who owns it and whether they have a right to use it 	<ul style="list-style-type: none"> • Know how to protect personal information and can explain the importance of doing this, including reporting any issues/concerns to an adult • Create and use strong and secure passwords • Explain how free apps may read and share their private information • Explain how apps may take additional payments for in app purchases and explain how to seek permission before purchasing 	<ul style="list-style-type: none"> • Know and explain the importance of protecting personal information and can explain consequences of not doing this • Use different passwords for a range of online services • Explain what to do if password is lost or stolen • Describe strategies for recognising scams and phishing
	E-safety	<ul style="list-style-type: none"> • Recognise websites and games appropriate for age and talk to an adult before downloading or using them • Write/post positive comments online • Understand what cyberbullying is and what it looks like • Know what it takes to be a responsible digital citizen • Recognise that not all emails are genuine, recognise when it may be fake and what to do about it • Explain ways people might change their identity online and why 	<ul style="list-style-type: none"> • Write/post positive and respectful comments online • Explain the need to talk to an adult before downloading files and games from the internet • Recognise what appropriate behaviour is when collaborating with others online • Explain that others online can pretend to be me or other people, including friends • Describe strategies for safe and fun experiences in a range of online social environments 	<ul style="list-style-type: none"> • Recognise that anything posted online can be seen by others and may affect others • Explain the importance of choosing an age-appropriate game, website or app • Identify possible dangers online and explain how to stay safe • Create an animation about digital safety • Explain how to block abusive users 	<ul style="list-style-type: none"> • Know and explain the consequences to self and others of not communicating kindly and respectfully online • Demonstrate how to support friends to protect themselves and make good choices online, including reporting concerns to an adult • Give examples of how to get help online and offline • Describe ways of capturing bullying content as evidence (screengrab, URL, profile) • Know how to identify, flag and report inappropriate content

Computer Science	Hardware & Networks	<ul style="list-style-type: none"> • Understand what the different components of a computer do and how they work together • Compare different types of computers • Know what a server does • Explain what a network is and its purpose • Identify key components within a network, including whether they are wired or wireless • Recognise links between networks and the internet 	<ul style="list-style-type: none"> • Understand the purpose of a router • Consolidate understanding of the key components of a network • Understand that websites and videos are files that are shared from one computer to another • Understand that servers on the internet are located across the world 	<ul style="list-style-type: none"> • Know that external devices can be programmed by a separate computer • Understand the difference between ROM and RAM • Recognise how the size of RAM affects the processing of data • Know vocabulary associated with data: data and transmit • Understand how data for digital images can be compressed • Recognise that computers transfer data in binary and understand simple binary addition 	<ul style="list-style-type: none"> • Know the history of computers and how they have evolved over time • Using their knowledge of historic computers, design a computer of the future • Recognise that updated software can help to prevent data corruption and hacking • Understand that computer networks provide multiple services, such as World Wide Web, and opportunities for communication and collaboration • Understand what HTML is and recognise HTML tags
	Programming	<ul style="list-style-type: none"> • Order/use and understand programming commands, including repeat • Recognise when a command/program needs to be debugged • Describe the algorithm for a simple task and solve errors within the program if they occur • Decompose tasks into smaller/separate steps to create an algorithm (animation) • Incorporate loops to make code more efficient • Understand that computers follow instructions 	<ul style="list-style-type: none"> • Write, test and debug a program with a given outcome • Identify errors in a program and debug them independently • Recognise that algorithms help to sequence more complex instructions • Use 'if... then' in an algorithm • Use decomposition to help solve problems • Use abstraction to focus on what's important in a design 	<ul style="list-style-type: none"> • Refine procedures by using repeat commands to improve a program • Change an input to a program to achieve a different output e.g. Scratch, Micro:bit • Use logical reasoning to detect and debug a mistake • Use multiple 'if...then' statements in a program to increase the variables • Use repetition within a program • Decompose animations into a series of images 	<ul style="list-style-type: none"> • Deconstruct problems into smaller steps, recognising similarities to prior solutions • Recognise when to use a variable in a program • Evaluate the effectiveness and efficiency of an algorithm whilst continually testing it • Recognise the need to use a variable to achieve a required output • Debug quickly and effectively to make a program more efficient • Decompose a program into an algorithm to change it and personalise it