



Understanding the World – Technology - Computing overview

Playing & Exploring - Engagement		Active Learning - Motivation		Creating & Thinking Critically - Thinking	
<ul style="list-style-type: none"> Finding out & exploring Playing with what they know Being willing to 'have a go' 		<ul style="list-style-type: none"> Being involved & concentrating Keep on trying Enjoying achieving what they set out to do 		<ul style="list-style-type: none"> Having their own ideas (creative thinking) Making links (building theories) Working with ideas (critical thinking) 	
ELG					
None					
Focus	Algorithms	Creating programs	Using technology	Use of IT beyond school	Safe use
Reception	<ul style="list-style-type: none"> Develops digital literacy skills by being able to access, understand and interact with a range of technologies 	<ul style="list-style-type: none"> Completes a simple program on electronic devices 	<ul style="list-style-type: none"> Can create content such as a video recording, stories, and/or draw a picture on screen 	<ul style="list-style-type: none"> Begin to list different IT in their home 	<ul style="list-style-type: none"> Begin to give reasons why we need to stay safe online Can use the internet with adult supervision to find and retrieve information of interest to them

Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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.

As a school, we have chosen the Kapow Computing Scheme of Work from Year 1 to Year 6. The scheme of work supports our teachers in delivering fun and engaging mixed age lessons, which help to raise standards and allow all pupils to achieve to their full potential. Option 1 – from long term plan for mixed age planning some subjects have been flexed to meet foundation subject links. Please refer to these document for further progression and planning information:

Mixed age long term plans

Mixed age progression of skills

Mixed age key skills and knowledge per unit

EYFS computing overview



Sheet Primary School Computing In-depth Overview

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Robins	All	<p>Using a Computer</p> <p>Key objectives: To learn what a keyboard is and how to locate relevant keys learning to log in and out Developing mouse control Click and drag Using an on line paint tool</p>	<p>All About Instructions</p> <p>Key objectives: Learn how to give precise instructions Learn how to follow instructions Learn how to debug instructions Know what an algorithm is</p>	<p>Programming Bee-Bots</p> <p>Key objectives: Learn the meaning of directional arrows Experiment and tinker with bee bot Follow an algorithm and debug with the help of an adult</p>		<p>Exploring Hardware</p> <p>Key objectives: Explore and identify computer hardware Learn to operate a digital camera Develop skills of photography Take selfie photographs to create class album</p>	<p>Introduction to Data</p> <p>Key objectives: Sort and categorise objects and themselves learn branching through physical sorting learn to interpret a basic pictogram</p>
	Key Area	COMPUTING SYSTEMS & NETWORKS	PROGRAMMING 1	PROGRAMMING 2		COMPUTING SYSTEMS & NETWORKS	DATA HANDLING
Kingfishers	Even Cycle B	<p>Algorithms unplugged</p> <p>Key objectives: I know what an algorithm is I can write a clear algorithm I know some input and outputs I know what decomposition means</p>	<p>Digital Imagery</p> <p>Key objectives: I know what a collage is I can take a photograph I can edit a photograph adding both images and text; resizing and dragging images around the page.</p>	<p>Introduction to Data</p> <p>Key objectives: I can collect and record data I can use technology to sort data I can show data in different ways</p>	<p>What is a computer?</p> <p>Key objectives: I understand what a computer is and that it's made up of different components. I can recognising that buttons cause effects and that technology follows instructions. I use greater control when taking photos with cameras, tablets or computers. I am developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.</p>	<p>Stop Motion</p> <p>Key objectives: Using greater control when taking photos with cameras, tablets or computers. Using logical thinking to explore software, predicting, testing and explaining what it does. To understand that an animation is made up of a sequence of photographs. To know that small changes in my frames will create a smoother looking animation. To understand what software creates simple animations and</p>	<p>International Space Station</p> <p>Key objectives: I can create and label images. I can collecting and input data into a spreadsheet. I can interpret data from a spreadsheet. I know what steps are needed to take to create an algorithm. I know what data to use to answer certain questions</p>



						some of its features e.g. onion skinning.	
	Key Area	PROGRAMMING	CREATING MEDIA	DATA HANDLING	COMPUTING SYSTEMS & NETWORKS	CREATING MEDIA	DATA HANDLING
	Odd Cycle A	<p>Improving Mouse Skills – Computing systems and Networks</p> <p>Key objectives:</p> <p>Use computers more purposefully Log in and navigate around a computer Drag, drop, click and control a cursor using a mouse Use software tools to create art on the computer</p>	<p>Bee-Bots – computing systems and networks</p> <p>Key objectives:</p> <p>Recognise cause and effect when pressing buttons on a Bee-Bot. Discuss and demonstrate how the Bee-Bot works. Record video, ensuring everyone is in the shot. Give several clear instructions in sequence. Program a Bee-Bot to reach a destination. Identify and correct mistakes in their programming.</p>	<p>Rocket to the Moon – Skills showcase</p> <p>Key objectives:</p> <p>Use a computer to make a list Explain the benefits of making a list on the computer Use a basic range of tools on graphics editing software to design a rocket Sequence instructions Follow instructions to build their model rocket Input data about their rockets into a table or spreadsheet</p>	<p>Make code or Scratch Jnr – Programming</p> <p>Key objectives:</p> <p>Identify different blocks and explain their basic use. Create a simple sequence of instructions using at least three different blocks. Identify a variety of blocks in MakeCode/scr demonstrating an understanding of their basic functions. Arrange code blocks in the correct order to create a working program. Identify any errors and debug their code effectively.</p>	<p>Algorithm and debugging – Programming</p> <p>Key objectives:</p> <p>Decompose a game to predict the algorithms. Give a definition for ‘decomposition’. Write clear and precise algorithms. Create algorithms to solve problems. Use loops in their algorithms to make their code more efficient. Explain what abstraction is.</p>	<p>Word processing – Computing systems and networks</p> <p>Key objectives:</p> <p>Explain which are the home row keys and how to find them for typing. Use the spacebar and backspace correctly. Type and make simple alterations to text using buttons on a word processor. Search for, import and alter appropriate images for a text document. Modify text in a document. Use copy and paste to copy text from one document to another. Explain what information is safe to be shared online.</p>
	Key Area	COMPUTING SYSTEMS & NETWORKS	COMPUTING SYSTEMS & NETWORKS	SKILLS SHOWCASE	PROGRAMMING	PROGRAMMING	COMPUTING SYSTEMS & NETWORKS
Hérons	Even Cycle B	<p>Comparison cards</p> <p>Key objectives:</p> <p>Explain what is meant by ‘field,’ ‘record,’ and ‘data.’ Compare paper and computerised databases.</p>	<p>Emailing</p> <p>Key objectives:</p> <p>Log in and out of email. Send a simple email with a subject plus ‘To’ and ‘From’ in the body of the text.</p>	<p>Journey inside a computer</p> <p>Key objectives:</p> <p>Recognise inputs and outputs and that the computer sends and receives information.</p>	<p>Collaborative Learning</p> <p>Key objectives:</p> <p>Understand software can be used collaboratively Recognising appropriate behaviour when collaborating</p>	<p>Investigating weather</p> <p>Key objectives:</p> <p>Record temperature research and record accurately. Design a weather station that gathers and records sensor</p>	<p>Computational Thinking</p> <p>Key objectives:</p> <p>Understand that problems can be solved more easily using computational thinking. Understand what the different code blocks do and create a simple game.</p>



		<p>Put values into a spreadsheet. Sort, filter and interpret data in a spreadsheet. Create a graph. Explain the purpose of visual representations of data.</p>	<p>Type in the email address correctly and send the email. Add an attachment to an email. Write an email using positive language, with an awareness of how it will make the recipient feel. Recognise unkind behaviour online and know how to report it. Offer advice to victims of cyberbullying. Recognise when an email may be fake and explain how they know.</p>	<p>Explain that the parts of a laptop work together and the purpose of each part. Explain what an algorithm is. Suggest what memory is for inside a computer. Make comparisons between different types of computer.</p>	<p>Use online documents for presentations forms and spreadsheets</p>	<p>data, explaining how it works and the units of measurement it would use. Design an automated machine that uses selection to respond to sensor data. Record weather forecast information in a spreadsheet and explain Create a video</p>	<p>Understand the terms pattern recognition and abstraction and how they help to solve a problem. Create a Scratch program which draws a square and at least one other shape. Understand how computational thinking can help to solve problems and apply computational thinking to problems they face.</p>
Key Area	DATA HANDLING	COMPUTING SYSTEMS & NETWORKS	COMPUTING SYSTEMS & NETWORKS	COMPUTING SYSTEMS & NETWORKS	DATA HANDLING	PROGRAMMING	



	<p>Odd Cycle A</p>	<p>Networks and the internet Key objectives: Recognise that a network is two or more devices connected and its purpose. Identify key components that make up the school's network. Explain the difference between wired and wireless connections. Understand the role of the server in a network when requesting a website. Identify parts of a website's journey to reach your computer. Understand that data is broken into packets.</p>	<p>Programming: Scratch Key objectives: Explain what some of the blocks do in Scratch. Explain what a loop is and include one in their program. Suggest possible additions to an existing program by remixing code. Recognise where something on screen is controlled by code. Use a systematic approach to find bugs. Understand the definitions of decomposition and algorithm and how they are used to create accurate code.</p>	<p>Video Trailers Key objectives: Describe the purpose of a trailer. Create a storyboard for a book trailer. Consider camera angles when taking photos or videos. Import videos and photos into film editing software. Record sounds and add these to a video. Add text to a video. Incorporate transitions between images. Evaluate their own and others' trailers.</p>	<p>Website Design Key objectives: Use most of the tabs (e.g. insert, pages, themes) on Google Sites on their website. Create a clear plan for their web page and begin to create it. Create a professional looking web page with useful information and a clear style, which is easy for the user to read and find information from. Create a clear plan by referring back to their checklist. Create four web pages with a range of features on their website.</p>	<p>Further scratch coding – Programming Key objectives: Understand how to create a simple script in Scratch. Add or change a sprite and prevent it from rotating. Use decomposition to identify key features and understand how to decipher actions that make the quiz game work. Understand what a variable is and how to use the 'say' and 'ask' blocks. Create a variable and be able to use a variable to record a score.</p>	<p>HTML Key objectives: Recognise the role of HTML in a web page. Add text between the heading and paragraph tags. Explore a web page using the inspect tool. Explain how they altered the HTML to create their posters. Alter the basic elements within a web page using the inspect tool. Replace the text and images in a webpage.</p>
	<p>Key Area</p>	<p>COMPUTING SYSTEMS & NETWORKS</p>	<p>PROGRAMMING</p>	<p>CREATING MEDIA</p>	<p>CREATING MEDIA</p>	<p>PROGRAMMING</p>	<p>SKILLS SHOWCASE</p>
<p>Kestrels</p>	<p>Even Cycle B</p>	<p>The History of Computing and Bletchley Park Key objectives: I know what cipher means I can identify some common codes I know some historic figures in computing I can crack a secret code</p>	<p>Micro bit Key objectives: I can recognise coding structures I can write more complex algorithms for a purpose. I can program an animation. I can use a range of programming commands.</p>	<p>Introduction to Python Key objectives: Decomposing a python program into an algorithm. Writing increasingly complex algorithms for a purpose. Debugging quickly and effectively to make a program more efficient. Using and adapting nested loops. Using logical thinking to explore software independently, iterating</p>	<p>Exploring AI Key objectives: Lesson planning not yet available (Oct 24)</p>	<p>Big Data 1 Key objectives: To know that data is often encrypted and why. Understand and identifying barcodes, QR codes and RFID. Gather and analyse data in real time. Create formulas and sorting data within spreadsheets. Learning how 'big data' can be used to solve a problem or improve efficiency.</p>	<p>Big Data 2 Key objectives: Understand how corruption can happen within data during transfer. Understand that computer networks provide multiple services. Use search and word processing skills to create a presentation. Creating formulas and sorting data within spreadsheets. Learning about the Internet of Things and how it has led to 'big data' and what it is.</p>



				ideas and testing continuously.			To know that devices that are not updated are most vulnerable to hackers. To know the difference between mobile data and WiFi.
Key Area	COMPUTING SYSTEMS & NETWORKS	PROGRAMMING	PROGRAMMING	PROGRAMMING	COMPUTING SYSTEMS & NETWORKS	DATA HANDLING	DATA HANDLING
Odd Cycle A	<p>Mars Rover 1 Key objectives:</p> <p>Recognising how the size of RAM affects the processing of data. Learning the vocabulary associated with data: data and transmit. Recognising that computers transfer data in binary and understanding simple binary addition. Relating binary signals (Boolean) to the simple character-based language, ASCII. Understanding how data is collected in remote or dangerous places.</p>	<p>Mars Rover 2 Key Objectives:</p> <p>Learn the difference between ROM and RAM. Understand the fetch, decode, execute cycle. Learn how the data for digital images can be compressed. Recognise that computers transfer data in binary and understanding simple binary addition. Understand how bit patterns represent images as pixels. Independently learn how to use 3D design software package TinkerCAD. Learn about different forms of communication that have developed with the use of technology.</p>	<p>Programming: Music Key Objectives:</p> <p>Predicting how software will work based on previous experience iterating and developing their programming as they work. Confidently using loops in their programming. Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. Using logical thinking to explore software more independently, making predictions based on their previous experience. Using a software programme (Scratch) to create music. Identify ways to improve and edit programs</p>	<p>Stop Motion Animation Key Objectives:</p> <p>Create a toy with simple images and a single movement. Think of a simple story idea for their animation and then decompose it into smaller parts to create a storyboard with simple characters. Make small changes to the models to ensure a smooth animation and delete unnecessary frames. Add effects such as extending parts and titles. Provide helpful feedback to other groups about their animations</p>	<p>Search Engines Key Objectives:</p> <p>Developing searching skills to help find relevant information on the internet. Learning how to use search engines effectively to find information, focus on keyword searches and evaluate search returns. Recognising that information on the Internet might not be true or correct and learning ways of checking validity. Anyone can create a website; therefore, people should take steps to check the validity of websites. What copyright is.</p>	<p>Invent a product Key Objectives:</p> <p>Writing increasingly complex algorithms for a purpose. Debugging quickly and effectively to make a program more efficient. Evaluating code to understand its purpose and to personalise. Using logical thinking to explore software independently, iterating ideas and testing continuously. Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions. Using design software Tinkercad to design a product. Creating a website with embedded links and multiple pages. Understanding how search engines work and using them safely.</p>	
Key Area	DATA HANDLING	SKILLS SHOWCASE	PROGRAMMING	CREATING MEDIA	COMPUTING SYSTEMS & NETWORKS	SKILLS SHOWCASE	
ON-LINE SAFETY	Even	Even year teaching EG; Feb 24 – Y1/2 will do Y2	During February each year we take a non-timetabled day and spend the time looking closely at on-line safety as a whole school. However this is backed up by regular assemblies throughout the year, weekly newsletter articles to parents, annual online safety meeting presentation and a monthly online safety newsletter (produced by Knowsley City Learning Centres) and distributed to all parents.				

