

Curriculum Outline 2024-25: ICT

[This document summarises the content to be delivered over the course of the year. There will be some rotation of topics due to resourcing implications]

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p style="text-align: center;">Year 5</p> <p>Year 5 overview - what are the students going to be achieving this year - at the end of year 5 we want all students to have a clear understanding of how to be able to surf and navigate the internet safely, being able to identify possible threats and how to deal with these in a calm and safe way. Students will develop a clear understanding of how to use Google Workspace safely and securely, not only within Computing but also across the whole school and at home. Students will then continue to develop their knowledge and understanding of how the internet works. We will then develop our creative design skills with the creation of Vector images. Students will finish the year learning block coding and the importance of sequencing of instructions and code some coding tasks.</p>	<p>(Concepts - learn how to use the computer systems, logging on creating folders. Accessing Google Drive. What is Google Drive? Using Google suite, slides, docs, drawings, sheets. Uploading and accessing work online)</p> <p>(Skills - Knowing how to create, edit, upload and share work online in order to work both independently and collaboratively with staff and peers.)</p> <p>Topic - Google Workspace Overview Logging into the computer system, where are all of the key folders. How to get onto Google Drive/mail/Classroom (1)</p> <p>Setting up Google Classroom, What is Google Drive (set up) / Mail. How to create folders and files and sharing of work with staff/peers (2)</p> <p>How to use Google Classroom (1)</p> <p>How to use Google Docs / Slides / Drawings (3)</p> <p>Google Assessment (1)</p>	<p>(Concepts - learn about ways to stay safe online and what to look out for when on line)</p> <p>(Skills - knowing what to look out for while online, observation skills and building awareness.)</p> <p>Topic - E-Safety Overview What is ICT and Using ICT Online (2)</p> <p>How to stay safe online / Dangers of ICT(2)</p> <p>Minimising the risks of using ICT(2)</p> <p>End of unit assessment(1)</p>	<p>(Concepts - Learn about the different connections that we use, wired and wireless and how computers are connected together over short (LAN) and long (WAN) distances)</p> <p>(Skills - being able to explain and justify what wired and wireless is and how they are different. What does a LAN and WAN look like?)</p> <p>Topic - How the internet works Overview What is the internet (2)</p> <p>The World wide web(2)</p> <p>Connecting to the internet(2)</p> <p>End of unit assessment(1)</p>	<p>(Concepts - what the different types image formats that are used within computing)</p> <p>(Skills - being able to explain what the differences between Vector and Bitmap images are)</p> <p>Topic - Vector images Overview Vector images and drawing tools(1)</p> <p>Creating Images(1)</p> <p>Making effective drawings(1)</p> <p>Layers and objects(1)</p> <p>Manipulation objects(1)</p> <p>End of unit assessment(1)</p>	<p>(Concepts - why order is important what block based programming is and its role within a computer system, how different bits of code link together, find and fix errors in code.)</p> <p>(Skills -computational thinking and logic, Ordering of instructions, Block based programing)</p> <p>Topic - Programming 1 Scratch Overview Scratch intro</p> <p>Sequence and variables(2)</p> <p>Selection(2)</p> <p>You've got the moves(2)</p> <p>fly cat fly(2)</p> <p>End of unit assessment(1)</p>	
<p>Extended Literacy opportunities:</p>	<p>Key topic words identified within lessons. The Google assessment - students have to read the assessment and follow the instructions given in order to complete it.</p>	<p>Key topic words identified within lessons. In lesson 3 students need to read the risks involved in using ICT and either match to ways to reduce risk or write their own.</p>	<p>Key topic words identified within lessons. In lesson 1 students have to write an email to me to explain what the internet is using subject specific language.</p>	<p>Key topic words identified within lessons.</p>	<p>Key topic words identified within lessons. 'Big Ed' work that the students complete, students have to read and understand the tasks set out for them and then complete them and write up their findings.</p>	
<p>NUMERACY:</p>		<p>Pie chart/bar on statistics for young people that use apps / have devices</p>	<p>Number of devices world wide Internet speeds - download/upload and bandwidth - number comparisons</p>	<p>Pixel resolutions multiplication by x10,x100,x1000</p>	<p>IF / Else Statements</p>	

<p>SMSC/Creativity Focus</p>	<p><u>Cultural capital</u> What is Google, where did it come from, why is it so popular?</p>	<p><u>Cultural capital</u> Is everyone who they say they are online? Who regulates the internet?</p>	<p><u>Cultural capital</u> Who created the internet (Sir Tim Bernards Lee) why was it created. Charles Babage & Ada lovelace.</p>	<p><u>Cultural capital</u> A vector graphic is a computer-made image that is made up of points, lines, and curves that are based upon mathematical equations, not pixels.The term bitmap comes from the computer programming terminology, meaning just a map of bits, a spatially mapped array of bits.</p>	<p><u>Cultural capital</u> 1883: The first programming language was developed in 1883 when Ada Lovelace and Charles Babbage worked together on the Analytical Engine, which was a primitive mechanical computer.</p>	
	<p>Autumn 1</p>	<p>Autumn 2</p>	<p>Spring 1</p>	<p>Spring 2</p>	<p>Summer 1</p>	<p>Summer 2</p>
<p>Year 6 Year 6 overview - We will have 2 lessons for usernames, passwords, Google Classroom setup and new features). Students this year will be looking at the development of AI into our everyday lives and how this is affecting us. We will look at what data is and how it can be used and their concepts. Students will continue to develop their programming (using Microbits) understanding of algorithms and focus more on different inputs and outputs and how these can affect programs. Students will end the year with e safety focusing on Blogging/vlogging and how to stay safe.</p>	<p>(Concepts -learn how to use spreadsheets to gather and record data, students will understand how formulas work and how to retrieve information from a spreadsheet) (Skills -Knowing how to create, edit and format a spreadsheet in order to get the correct information from. What a formula is and how to use them on given data.) <u>There will be 1 lesson for usernames, passwords, Google Classroom setup and new features</u> Topic - Spreadsheets <u>Overview</u> Collecting data (1) Formatting a spreadsheet (1) What's the formula? (1) End of unit assessment(1)</p>	<p>(Concepts - learn what AI is and how is is affecting our everyday lives) (Skills - being able to explain what an AI system looks like and understand what the impact might be upon our lives) Topic -Artificial intelligence <u>Overview</u> what is AI(1) Gorilla glass (1) Robots vs Humans(1) AI and Robotics(1) End of unit assessment(1)</p>	<p>(Concepts - what if we didn't have computer networks where we could share information and resources with each other) (Skills - being able to explain different ways of sharing information with each other justifying the advantages and disadvantages of this) Topic - What if there were no networks? <u>Overview</u> Computer Networks(1) Networking Hardware(1) The internet (1) World wide web(1) Wired and Wireless(1) End of unit assessment(1)</p>	<p>(Concepts - understanding that the term data can mean a variety of different concepts such as, sound, numbers, words, graphics) (Skills -being able to determine different types of data and what they are used for.) Topic - Data representation <u>Overview</u> Representing Data(2) Images(1) Creating a vector logo (3) End of unit assessment(1)</p>	<p>(Concepts - developing an in depth understanding of logic and sequencing and why it is important.) (Skills -computational thinking and logic, Ordering of instructions.) Topic - Micro Bits <u>Overview</u> Variable(3) Selection (2) Developing algorithms End of unit assessment(1)</p>	
<p>Extended Literacy opportunities:</p>	<p>Key topic words identified within lessons. Students are reading the data that is given to them and then putting it into a spreadsheet in the correct position</p>	<p>Key topic words identified within lessons. Students read an article about AI within their lives.</p>	<p>Key topic words identified within lessons. Reading statements and placing them in the correct order. Students watch a video and then answer questions about the internet.</p>	<p>Key topic words identified within lessons. Students have a range of key words and have to fill in the blanks in a paragraph given to them.</p>	<p>Key topic words identified within lessons.Students write their own variable character descriptions for a given scenario.</p>	
<p>NUMERACY:</p>	<p>Working with Google Slides to do a budgeting activity - formulas - extension (pie chart/bar) - Data collection- =sum</p>	<p>Memory sizes</p>	<p>Dates and Timelines</p>	<p>Looking at Numbers in data multiplication by x10,x100,x1000</p>	<p>Sequence and number orders</p>	
<p>SMSC/Creativity Focus</p>	<p><u>Cultural capital</u> What is Google, where did it come from, why is it so popular?</p>	<p><u>Cultural capital</u> Advancements with AI such as smart speakers and smart devices.</p>	<p><u>Cultural capital</u> Who created the internet (Sir Tim Bernards Lee) why was it created.</p>	<p><u>Cultural capital</u> Why is ASCII used across the whole world?</p>	<p><u>Cultural capital</u> Programming, who was the first programmer?</p>	

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<p>Year 7</p> <p>Year 7 overview - Students We will have 1/2 lessons for usernames, passwords, Google Classroom setup and new features). We want students to have a clear understanding of the different hardware and software that is available and the difference between them being able to identify the most appropriate for a given scenario. Students should continue to develop and become confident block coders being able to identify patterns and sequences within code using small basic, a language used as a stepping stone for Python.</p>	<p>(Concepts -that there are lots of different types of storage devices and areas within a computer system where information is stored)</p> <p>(Skills - reasoning and awareness of the different types of storage)</p> <p><u>There will be 1 lesson for usernames, passwords, Google Classroom setup and new features</u></p> <p>Topic - E-safety <u>Overview</u> Cyber ready (1)</p> <p>Fake news(1)</p> <p>Social media safety(1)</p> <p>Minimising the risk(1)</p> <p>Online profiles(1)</p> <p>End of unit assessment(1)</p>	<p>Concepts - different types of programming languages exist and they are used for different challenges.)</p> <p>(Skills - being able to explain the difference between block based programming languages and text based ones.</p> <p>Topic - Programming - Small Basic <u>Overview</u> Turtle Graphics 3</p> <p>Turtle shapes 3</p> <p>End of unit assessment(1)</p>	<p>Concepts - all computers use Binary to share and communicate information. Logic gate are a computer's way of helping it to sort out computing concepts.</p> <p>(Skills - being able to understand what binary and Decimal are and being able to solve, draw and create logic gate problems</p> <p>Topic - Binary and Decimal <u>Overview</u> Logic gates - AND, OR, NOT what are these/ role they within a computer system (3)</p> <p>What is Decimal and binary (1)</p> <p>Decimal to binary conversions(1)</p> <p>End of unit assessment(1)</p>	<p>Concepts - Computer systems are made up of hardware and software, we need to understand what these are and how they interact with each other in order to choose the right hardware or software for any given task.</p> <p>(Skills -understanding the roles that different Hardware and Software play within a computer system and being able to explain and justify these choices.)</p> <p>Topic - Hardware & Software <u>Overview</u> Data flow - input/process/output(1)</p> <p>Internal and external hardware and their function(1)</p> <p>Peripherals(1)</p> <p>Storage devices(1)</p> <p>Software - applicational, operational, utility(1)</p> <p>End of unit assessment(1)</p>	<p>Concepts - why order is important)</p> <p>(Skills -computational thinking and logic. Ordering of instructions.)</p> <p>Topic - Computational Thinking <u>Overview</u> what is CT(1)</p> <p>Sorting data - binary and linear search(1)</p> <p>What are Flowcharts (1)</p> <p>Data sorts (1)</p> <p>End of unit assessment(1)</p>	<p>Concepts - what networking is, what makes a network a network and why.</p> <p>(Skills -understanding how information is shared over a network, being able to identify the best network for a given scenario.</p> <p>Topic - Networking <u>Overview</u> Communicating(3)</p> <p>Network Hardware(1)</p> <p>Network topologies(1)</p> <p>End of unit /year assessment(1)</p>
<p>Extended Literacy opportunities:</p>	<p>Key topic words identified within lessons. Students read stories and then identify key points within them. Students look at pros and cons and then explain why.</p>	<p>Key topic words identified within lessons. Students are writing lines of code to form programs using keywords and in a specific way.</p>	<p>Key topic words identified within lessons. What is a truth table and how is it different to a logic gate but also how they link together and one represents the other.</p>	<p>Key topic words identified within lessons. Students are given devices and are asked to explain what each device does within a computer system.</p>	<p>Key topic words identified within lessons. Students identify what the CT process is and design their own CT process writing down the steps involved.</p>	<p>Key topic words identified within lessons. Read the six scenarios below. Identify whether it would be best to use a wired or wireless network.</p>
<p>NUMERACY:</p>		<p>X-Y Axis, Angles and degrees</p>	<p>Binary to Decimal conversions +/- AND OR NOT Gates</p>	<p>Storage sizes and how they are used</p>	<p>Binary/Linear sorts</p>	<p>Bandwidth sizes</p>
<p>SMSC/Creativity Focus</p>	<p><u>Cultural capital</u> How does fake news affect our views?</p>	<p><u>Cultural capital</u> Enigma machine, Alan Turing</p> <p>Charles Babbage. Ada Lovelace and the difference engine programming.</p>	<p><u>Cultural capital</u> Modern day smartphones have more computing power than the Apollo 11 space shuttle</p> <p>Smart devices and their use of storage and memory sizes - not just random numbers being used.</p>	<p><u>Cultural capital</u> Elon Musk - chip placed in peoples head.</p>	<p><u>Cultural capital</u> In 1921, industrial engineers Frank and Lillian Gilbreth introduced the "Flow Process Chart" to the American Society of Mechanical Engineers (ASME).</p>	<p><u>Cultural capital</u> Who created the internet (Sir Tim Berners-Lee) why was it created.</p>

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<p>Year 8</p> <p>Year 8 overview We will have 1 or 2 lessons for usernames, passwords, Google Classroom setup and new features). We want students to be able to build upon and develop their knowledge and understanding for computing by delving deeper into the hardware and software that is used within a computer system. Students will develop a greater understanding for networking and how it is used in everyday life. They will also look into how data is stored within a system. Students will gain the opportunity to be creative and use Photoshop to create a digital graphic. Students will start creating more detailed program code using python.</p>	<p>(Concepts - what is data, why is data used, what can data be used for)</p> <p>(Skills - being able to read and use data to extract specific content)</p> <p><u>There will be 1 lesson for usernames, passwords, Google Classroom setup and new features</u></p> <p>Topic - Modelling Data <u>Overview</u> Spreadsheets(1)</p> <p>Collecting data(1)</p> <p>Using data for yourself and others(1)</p> <p>End of unit assessment(1)</p>	<p>(Concepts -that there are lots of different types of storage devices and areas within a computer system where information is stored)</p> <p>(Skills - reasoning and awareness of the different types of storage)</p> <p>Topic - E-safety <u>Overview</u> Introduction to online safety</p> <p>Online reputation</p> <p>Big data</p> <p>End of unit assessment(1)</p>	<p>(Concepts -why does we have storage within a computer, what would happen if storage didn't exist?)</p> <p>(Skills - explain and justify the need for computer storage within a system or in the cloud.)</p> <p>Topic - Networking and Storage <u>Overview</u> Network devices and connections (2)</p> <p>Network types, LAN WAN WPAN (2)</p> <p>Wired and wireless networks (1)</p> <p>End of unit assessment(1)</p>	<p>(Concepts - why websites are designed the way that they are and the processes that are gone through to make one)</p> <p>(Skills -being able to draw on their use of websites and what makes a good website when it comes to the design of it)</p> <p>Topic - Creating Digital Graphics <u>Overview</u> What is a digital graphic (1) (SP2)</p> <p>Identifying the properties of Digital Graphics (1)(SP2)</p> <p>Visualisation diagram (1)(SP2)</p> <p>Image gathering (1)(SP2)</p> <p>Tools and features of photoshop(1)(SM1)</p> <p>Design and creation of a digital graphic. (5)(SM1)</p> <p>Evaluation (1)(SM1)</p> <p>End of unit assessment(1)(SM1)</p>	<p>(Concepts - what block based programming is and its role within a computer system, how different bits of code link together)</p> <p>(Skills - logic and reasoning and pattern recognition)</p> <p>Topic - Python understanding <u>Overview</u> What is python - strings and variables(3)</p> <p>Python numbers and Arithmetic (3)</p> <p>End of unit/year assessment(1)</p>	
<p>Extended Literacy opportunities:</p>	<p>Key topic words identified within lessons. Students match key words to their meanings.</p>	<p>Key topic words identified within lessons. Students read Character descriptions and identify key points from the text, creating a timeline for each character.</p>	<p>Key topic words identified within lessons. Write down 4 advantages and 4 disadvantages of a wireless network-explain why there are advantages/disadvantages</p>	<p>Key topic words identified within lessons. Students write an evaluation for their finished product</p>	<p>Key topic words identified within lessons. Students write text based code</p>	
<p>NUMERACY:</p>	<p>Spreadsheets data analysis - data collection</p>		<p>Storage sizes within a computer system</p>	<p>Sizes of canvas - pixel resolution of images</p>	<p>Algorithms</p>	
<p>SMSC/Creativity Focus</p>	<p><u>Cultural capital</u> Why do we obsess about data?</p>	<p><u>Cultural capital</u> What is Google, where did it come from, why is it so popular?</p>	<p><u>Cultural capital</u> why we have storage, relating it to smartphone storage. How cloud storage works, saving information in several locations and why?</p>	<p><u>Cultural capital</u> Careers in web design weren't even a job 30 years ago. These also changed 10 years later with the development of smartphones and how the internet and web pages are viewed-changing again with wearable devices.</p>	<p><u>Cultural capital</u> Python used in the programming of Google, used a Cern, used for Nokia phone and some computer games</p>	