

Curzon Computing Curriculum

Our Intent

Curzon specific aims of Computing

Our aim at Curzon is to foster a love of learning where pupils' curiosity is encouraged allowing them to explore and discover the technological and digital world around them, in turn, helping them to grow, flourish and succeed as they move onto their next stage of education and life experiences. We believe that computational thinking is important in helping pupils to solve problems and design systems. Being able to do so makes our pupils better able to conceptualise, understand and use computer-based technology, and so are better prepared for today's world and future.

Computing has become a part of the way we all work; almost everything we do at school now involves the use of computing from delivering lessons via the interactive whiteboard as adults through to pupils using Chromebooks and iPads to conduct own research and complete tasks. We aim for the pupils to be digitally literate so they can find, explore, analyse, exchange and present information. It is our intent that Curzon pupils become responsible users of technology and can use the internet respectfully and safely; this is a major part of enabling the pupils to be confident, creative and independent learners. We aim for all pupils, including those who are disadvantaged, to develop the skills, knowledge and tools to succeed in a digital future.

We have high ambitions for all pupils. Our ethos is to enable all pupils to reach their potential. We do not place a ceiling on attainment. Through carefully designing our computing curriculum to include a range of different activities (e.g. paired work, range of programs), we ensure that all pupils, including SEND, can participate fully. We use technology to enable all our pupils to access all areas of the curriculum, e.g. use of chromebooks to record writing for those who struggle with motor skills. Our curriculum is designed to ensure that higher attainers are challenged through increased opportunities to manipulate software and time for extended computational thinking.

Our vision is that everyone grows like the mustard seed to become the best they can be in an ever-evolving digital world and respect others both on and offline. Everyone has the chance to experience the same opportunities no matter their background and can become advocates for the future of technology. This vision is embedded across the curriculum and underpins Curzon's ethos.

How this links with our school vision: growing in wisdom and respect to become an online role model, using technology in a safe and positive way to take care of one another, in a digital society.

Whilst following the National Curriculum, we have chosen topics according to the following criteria and made our computing curriculum unique to Curzon:

Emphasis on e-safety

We are mindful of the national context of increasing cases of online bullying and abuse and pupils accessing inappropriate material at home. We aim for our pupils to use technology safely and respectfully, knowing what to do if there is an issue and how to get help. We want them to be able to make informed choices based on what they know is right and wrong. Each year, term starts with a reminder of e-safety and we make it explicit that the rules of e safety apply at home as much as at school. Year 6 end the year with a lesson on e safety to prepare them for secondary school. We carry out annual pupil and staff e-safety surveys.

A challenging computing curriculum

We are aware that technology is changing all the time. Our pupils are growing up in an increasingly digital world and have more knowledge of technology than they did 10 years ago. We have chosen Switched on Computing as the content is frequently updated and it provides challenging tasks, such as creating webcasts and programming using Python.

Developing cross curricular links

Where appropriate, we have drawn on our humanities topics when teaching specific areas of knowledge and skill. This creates a relevant context for computing lessons and consolidates the learning in both computing and humanities. For example, Year 4 collaborate on weather powerpoints as part of the unit on being co authors. Year 6 create fair trade advertisements when they are learning about being advertisers.

Computing across the curriculum

We intend for technology to enhance learning in all subjects and plan for its use across the curriculum e.g. graphs in science, creating presentations in humanities.

Developing resilience

One of our key aims in computing, as in other subjects, is to develop pupils' resilience. We teach Curzon pupils to try something out and to solve the problems themselves within the safe environment of a game or program. Switched on Computing was chosen as there is a real emphasis on debugging and trial and error. This links with our value of courage.

Knowledge and skills that we intend our pupils to achieve

Computer Science	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing PoS	Pupils should be taught to: complete a simple program on a computer.	Pupils should be taught to: 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.		Pupils should be taught to: 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 select.			
Skills	<ul style="list-style-type: none"> -I can program a toy (Bee-Bot) using simple instructions -I understand that I control the programmable toy -I can use a suitably aged program on a computer effectively 	<ul style="list-style-type: none"> -I understand that a programmable toy can be controlled by inputting a sequence of instructions. -I can develop and record sequences of instructions as an algorithm. -I can program a toy to follow an algorithm 	<ul style="list-style-type: none"> -I have a clear understanding of algorithms as sequences of instructions -I can convert simple algorithms to programs -I can predict what a simple program will do -I can spot and fix debugs in my programs 	<ul style="list-style-type: none"> -I can create an algorithm for an animated scene in the form of a storyboard -I can write a program in Scratch to create the animation -I can correct mistakes in animation programs -I can develop a number of strategies for finding errors in programs -I have an increasing knowledge of Scratch 	<ul style="list-style-type: none"> -I can develop an educational game using selection and repetition -I understand and can use variables -I am beginning to debug computer programs -I can design and make an on-screen prototype of a computer-controlled toy -I understand different forms of input and output -I can design, write and debug the control and 	<ul style="list-style-type: none"> -I can create original artwork and sound for a game -I can design and create a computer program for a computer game, which uses sequence, selection, repetition and variables -I can detect and correct errors in my computer game -I can use iterative development techniques (making and testing a 	<ul style="list-style-type: none"> -I can learn some of the syntax of a text-based programming language Python -I can use commands to display text on screen, accept typed user input, store and retrieve data using variables and select from a list -I can plan a text-based adventure with multiple 'rooms' and user interaction -I can thoroughly debug the program

		-I can debug my programs -I can predict how a program will work -I can break down a process into simple, clear steps, as in an algorithm	-I can describe what happens in computer games -I can use logical reasoning to make predictions -I can test my predictions	-I can recognise a number of common types of bugs in software	monitoring program for my toy -I can use HTML tags for elementary mark up -I can use hyperlinks to connect ideas and sources -I can code up a simple web page with useful content	series of small changes) to improve my game -I am familiar with semaphore and morse code	-I am developing the ability to reason logically about algorithms -I understand how key algorithms can be expressed as programs -I understand that some algorithms are more efficient than others for the same problem -I understand common algorithms for sorting and searching
Vocabulary	Click, On/Off, Up, Down, Space, Left, Right, Clear	Instructions, Input, Sequence Build up vocabulary learnt in prior years.	Scratch, Test, Predict, Algorithm, Robot, Debug, Program Build up vocabulary learnt in prior years.	Animation, Software. Code Build up vocabulary learnt in prior years.	HTTP, Hyperlink, URL, input, output, simulation, interactive, prototype Build up vocabulary learnt in prior years.	Cipher, Decrypt, Encrypt, Morse Code, Semaphore, Caesar Build up vocabulary learnt in prior years.	Python, Variable, Procedure, Syntax, Flowchart, Pseudocode, Linear Search, Random Search, Binary Search, Quicksort, Selection Sort Build up vocabulary learnt in prior years.
Information Technology	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing PoS	Pupils should be taught to: use ICT hardware to interact with age-appropriate computer software.	Pupils should be taught to: use technology purposefully to create, organise, store, manipulate and retrieve digital content and recognise common uses of information technology beyond school.		Pupils should be taught to: 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.			

Skills	<ul style="list-style-type: none"> -I know how to turn the computer on/off -I can use the mouse effectively to achieve a desired outcome -I am beginning to use the keyboard effectively -I can use age-appropriate software correctly. 	<ul style="list-style-type: none"> -I can use different features of a video camera -I can select and use appropriate tools -I can use simple sound recording equipment 	<ul style="list-style-type: none"> -I can use a digital camera or camera app -I can edit and enhance photographs -I can record information on a digital map -I can collect data using tick charts or tally charts -I can use simple charting software to produce pictograms and other basic charts 	<ul style="list-style-type: none"> -I am gaining skills in shooting live video, holding the camera steady and reviewing -I can edit videos, add narration and set in/out points -I can search for and evaluate online images 	<ul style="list-style-type: none"> -I can use computer-based data logging to automate the recording of some weather data -I can analyse data, explore inconsistencies and make predictions -I can use one or more programs to edit music -I can create and develop a musical composition, refining ideas through reflection and discussion -I can research for a purpose 	<ul style="list-style-type: none"> -I am developing my research skills to decide which information is appropriate -I understand some elements of how search engines select and rank results -I am developing a familiarity of a simple CAD (computer aided design) tool -I understand the work of architects and engineers working in 3D -I can explore and experiment with 3D virtual environments, developing my spatial awareness 	<ul style="list-style-type: none"> -I understand key features of internet communication protocols -I can shoot suitable original footage and source additional content, acknowledging intellectual property rights
Vocabulary	<ul style="list-style-type: none"> Mouse, Keyboard, Monitor, Printer, Cursor 	<ul style="list-style-type: none"> Build up vocabulary learnt in prior years. 	<ul style="list-style-type: none"> Pixel, Picasa, Portfolio, Chart, Classification Key, Data, Database Build up vocabulary learnt in prior years. 	<ul style="list-style-type: none"> Internet, The Web, Build up vocabulary learnt in prior years. 	<ul style="list-style-type: none"> Data-logging, spreadsheet, sample, software, copyright, Build up vocabulary learnt in prior years. 	<ul style="list-style-type: none"> Geometric, Landscape, op art, Symmetry, Tessellations, Screencast, Navigation Build up vocabulary learnt in prior years. 	<ul style="list-style-type: none"> IP address, Packet of Data, Webserver, Domain Name Service (DNS) Build up vocabulary learnt in prior years.

Digital Literacy including E-Safety	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing PoS	Pupils should be taught to: use technology safely; identify where to go for help and support if they have concerns when using online technology.	Pupils should be taught to: use technology purposefully to create, organise, store, manipulate and retrieve digital content. Pupils should be taught 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.		Pupils should be taught 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, use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Pupils should be taught to: use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.			
Skills	<ul style="list-style-type: none"> - I can use basic mouse control - I can use basic keyboard skills E-Safety -I can use the web safely -I know what to do if I see something that worries me 	<ul style="list-style-type: none"> -I am developing my basic keyboard skills -I am developing basic mouse skills -I can combine text and images -I can save and store my work 	<ul style="list-style-type: none"> -I can edit and format text in emails -I can create and deliver a short multimedia presentation E-Safety -I am aware of how to use games safely and in balance 	<ul style="list-style-type: none"> -I can use search engines to learn about a new topic -I can plan, design and deliver an interesting and engaging presentation -I can create my own original images -I can create a video slidecast of a narrated presentation E-Safety 	<ul style="list-style-type: none"> -I can write for a target audience using a wiki tool -I can use presentation software and video -I can use spreadsheets to create charts E-Safety -I understand some of the risks in using the web -I am becoming familiar with Wikipedia, including 	<ul style="list-style-type: none"> -I am becoming familiar with blogs as a medium and a genre of writing -I can create a sequence of blog posts on a theme -I can incorporate additional media and comment on the posts of others -I am developing an understanding of turtle graphics 	<ul style="list-style-type: none"> -I can manage or contribute to collaborative projects, facilitate using online tools -I can write and review content -I can design and produce a high-quality print document -I can storyboard an effective advert for a cause

		<p>-I can store and retrieve files</p> <p>E-Safety</p> <p>-I can use the web safely to find and use pictures</p> <p>-I know what to do if I encounter pictures that cause concern</p>	<p>with other activities</p> <p>-I am aware of online safety issues when using email</p> <p>-I can use appropriate language in emails</p> <p>-I can search for information safely</p>	<p>-I have a developing understanding of how the internet, web and search engines work</p> <p>-I have a developing understanding of how email works</p> <p>-I am gaining skills in using emails</p>	<p>potential problems associated with its use</p> <p>-I am aware of the responsibilities when editing other people's work</p>	<p>-I can experiment with tools available, refining and evaluating as I do</p> <p>-I have an awareness of computer-generated art, in particular fractal-based landscapes</p> <p>E-Safety</p> <p>-I understand the need for private information to be encrypted</p> <p>-I can encrypt and decrypt messages in simple ciphers</p> <p>-I appreciate the need to use complex passwords and to keep them secure</p> <p>-I have some understanding of how encryption works on the web</p> <p>-I have some understanding of how encryption works on the web</p> <p>-I decide what information is appropriate when researching</p> <p>-I understand how search engines select and rank results</p>	<p>E-Safety</p> <p>-I can research a location online using a range of resources appropriately</p> <p>-I understand the safe use of mobile technology, including GPS</p> <p>-I can source digital media while demonstrating safe, respectful and responsible use</p> <p>I know how to get help if something unsafe happens online.</p>
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						-I am continuing to develop my understanding of online safety and responsible uses of technology	
Vocabulary	E-Safety	Text, image, save, find E-Safety	Address, Attachment, Email, Fact File, Evidence, Header, Presentation Google, Search Engine, Research, Password Build up vocabulary learnt in prior years.	Slidecast, presentation, Security, Email Build up vocabulary learnt in prior years.	Spreadsheets, Wikipedia, Wikipedia's Five Pillars, Reliable, Wiki Build up vocabulary learnt in prior years.	Blog, Blogroll, Copyright, Hyperlinks, Podcast. Dashboard Bias, Page Rank, Revision History, Build up vocabulary learnt in prior years.	Desktop Publishing (DTP), Typeface, Yearbook, Footage, Final Cut, Creative Commons, Advert, Rough Cut Smartphone, Metadata Build up vocabulary learnt in prior years.

Year Group Progressions for each standard

Year Group	Working Towards	Expected	Greater Depth
Year 1	Computer Science <ul style="list-style-type: none"> • The child can understand that goals can be achieved by following a sequence of steps. • The child can program Bee Bots using individual instructions according to a plan. • The child can give instructions, one at a time, to a Bee Bot. 	Computer Science <ul style="list-style-type: none"> • The child can understand algorithms as sequences of instructions in everyday contexts. • The child can program Bee Bots using sequences of instructions to implement an algorithm. • The child can give a sequence of instructions to a Bee Bot. 	Computer Science <ul style="list-style-type: none"> • The child can appreciate the need for precise and unambiguous instructions in algorithms. • The child can appreciate that programming a digital device involves commands in a formal language.

	<ul style="list-style-type: none"> The child can make predictions about what a program will do. <p>Information Technology</p> <ul style="list-style-type: none"> The child can store content on digital devices. The child can create content on a digital device. <p>Digital Literacy</p> <ul style="list-style-type: none"> The child can acknowledge the need to stay safe when using technology. The child can understand that some information should be kept private. The child can understand what to do if they see disturbing content online at school. 	<ul style="list-style-type: none"> The child can give explanations for what they think a program will do. <p>Information Technology</p> <ul style="list-style-type: none"> The child can use digital technology to store and retrieve content. The child can create original content using digital technology. <p>Digital Literacy</p> <ul style="list-style-type: none"> The child can keep themselves safe while using digital technology. The child can understand that information on the internet can be seen by others. The child can understand what to do if they see disturbing content online at home or at school. 	<ul style="list-style-type: none"> The child can give a sequence of instructions to a Bee Bot, correcting mistakes. The child can give logical explanations for what they think a program will do. <p>Information Technology</p> <ul style="list-style-type: none"> The child can use digital technology to organise, store and retrieve content The child can create and edit original content using digital technology. <p>Digital Literacy</p> <ul style="list-style-type: none"> The child can keep safe and show respect to others while using digital technology. The child can understand that information on the internet can be seen by others. The child can understand what to do if they have concerns about content or contact online.
Year 2	<p>Computer Science</p> <ul style="list-style-type: none"> The child can understand algorithms as sequences of instructions in everyday contexts. The child can program floor turtles using sequences of 	<p>Computer Science</p> <ul style="list-style-type: none"> The child can understand algorithms as sequences of instructions or sets of rules in everyday contexts. The child can program on screen using sequences of 	<p>Computer Science</p> <ul style="list-style-type: none"> The child can appreciate that some algorithms are more efficient than others. The child can understand that the same algorithm can be

	<p>instructions to implement an algorithm.</p> <ul style="list-style-type: none"> • The child can create a program for a floor turtle. • The child can give explanations for what they think a program will do. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can store and retrieve content on digital devices. • The child can create original content for a given purpose using digital technology. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can keep safe while using digital technology. • The child can understand that information on the internet can be seen by others. • The child can understand what to do if they see disturbing content online at home or at school. 	<p>instructions to implement an algorithm.</p> <ul style="list-style-type: none"> • The child can create a simple program on screen, correcting any errors. • The child can give logical explanations for what they think a program will do. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can store, organise and retrieve content on digital devices for a given purpose. • The child can create and edit original content for a given purpose using digital technology. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can keep safe and show respect to others while using digital technology. • The child can understand that they should not share personal information online. • The child can understand what to do if they have concerns about content or contact online. 	<p>implemented in multiple programming languages.</p> <ul style="list-style-type: none"> • The child can create more complex programs on screen, correcting any errors. • The child can work out some of the underlying algorithm by experimenting with a program while it runs. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can show some understanding that different types of information are all stored in a digital format on computers. • The child can create and edit original content for a given purpose using digital technology and paying attention to the intended audience. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can stay safe and act respectfully and responsibly when using digital technology. • The child can show some understanding of broader issues around online privacy. • The child can have a range of strategies for dealing with concerns over content or contact online.
Year 3	Computer Science	Computer Science	Computer Science

	<ul style="list-style-type: none"> • The child can design and implement some aspects of a program using a block language, which can run automatically without user interaction. • The child can understand that physical systems can be simulated on screen. • The child can identify parts of a project. • The child can understand that programs include sequences of instructions. • The child can understand that computers accept input and produce output. • The child can predict what an algorithm will do. • The child can spot errors in programs. • The child can understand that computer networks transmit information. • The child can understand that email works through the internet. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use some simple programs on a computer. • The child can create content on a computer. 	<ul style="list-style-type: none"> • The child can design and write a program using a block language, without user interaction. • The child can explore simulations of physical systems on screen. • The child can plan a project. • The child can use sequence in programs. • The child can write a program to produce output on screen. • The child can explain a simple, sequence-based algorithm in their own words. • The child can use logical reasoning to detect errors in programs. • The child can understand that computer networks transmit information in a digital (binary) format. • The child can understand that email and videoconferencing are made possible through the internet. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use a range of programs on a computer. • The child can design and create content on a computer. • The child can collect and present information. 	<ul style="list-style-type: none"> • The child can design, write and debug a program using a block language, without user interaction. • The child can develop their own simulations of a simple physical system on screen. • The child can work with others to complete a project. • The child can use sequence and repetition in programs. • The child can write a program to produce output on screen and through speakers/headphones. • The child can explain an algorithm using sequence and repetition in their own words. • The child can use logical reasoning to detect and correct errors in programs. • The child can understand some ways in which information can be converted into a binary code. • The child can understand that the internet can provide a number of services in addition to the web. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use and combine a range of programs on a computer. • The child can design and create content on a computer in response to a given goal.
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	<ul style="list-style-type: none"> • The child can collect information. • The child can search for information on a web page. • The child can understand that search engines make it easier to find content online. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can use digital technology safely. • The child can give examples of things that they should or should not do when using digital technology. • Know who to talk to about inappropriate behaviour in school. • The child can make choices about which web page they consider most useful. • The child can use email to communicate with a classmate. 	<ul style="list-style-type: none"> • The child can search for information within a single site. • The child can understand that search engines select pages according to keywords found in the content. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can use digital technology safely and show respect for others when working online. • The child can recognise unacceptable behaviour when using digital technology. • Know who to talk to about concerns and inappropriate behaviour in school. • The child can decide whether a web page is relevant for a given purpose or question. • The child can use email and videoconferencing in class. 	<ul style="list-style-type: none"> • The child can collect, evaluate and present information. • The child can use a standard search engine to find information. • The child can understand that search engines rank pages according to relevance. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can demonstrate that they can act responsibly when using computers. • The child can understand the difference between acceptable and unacceptable behaviour when using digital technology. • Know who to talk to about concerns and inappropriate behaviour at home or in school. • The child can decide whether digital content is relevant for a given purpose or question. • The child can use email and videoconferencing effectively for a given purpose.
Year 4	<p>Computer Science</p> <ul style="list-style-type: none"> • The child can design and implement some elements of a program using a block language to a given brief, including simple interaction. 	<p>Computer Science</p> <ul style="list-style-type: none"> • The child can design and write a program using a block language to a given brief, including simple interaction. 	<p>Computer Science</p> <ul style="list-style-type: none"> • The child can design, write and debug a program using a block language to a given brief, including simple interaction.

	<ul style="list-style-type: none"> • The child can implement some elements of a simulation on screen. • The child can identify different ways to tackle a project. • The child can use sequence in programs. • The child can write a program to produce output on screen. • The child can explain a simple, sequence-based algorithm in their own words. • The child can use logical reasoning to detect errors in programs. • The child can understand that computer networks transmit information in a digital (binary) format. • The child can understand that the internet and the web are not the same. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use a range of programs on a computer. • The child can design and create content on a computer. • The child can collect data. • The child can search for information within a single site. 	<ul style="list-style-type: none"> • The child can develop their own simulation of a simple physical system on screen. • The child can work with others to plan a project. • The child can use sequence and repetition in programs. • The child can write a program that accepts keyboard input and produces on-screen output. • The child can explain an algorithm using sequence and repetition in their own words. • The child can use logical reasoning to detect and correct errors in programs. • The child can understand that the internet transmits information as packets of data. • The child can understand how the internet makes the web possible. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use and combine a range of programs on a computer. • The child can design and create content on a computer in response to a given goal. • The child can collect and present data. 	<ul style="list-style-type: none"> • The child can develop their own simulation of a physical system on screen including interactivity. • The child can work collaboratively to complete a project according to an agreed plan. • The child can use sequence, selection and repetition in programs. • The child can write a program that accepts keyboard or other input and produces output on screen and through speakers. • The child can explain an algorithm using sequence, repetition and selection in their own words. • The child can give reasons for errors in programs and explain how they have corrected these. • The child can understand that packets are not routinely encrypted on the internet. • The child can show an awareness of how HTTP operates. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use and combine a range of programs on multiple devices. • The child can design and create content on a computer in response to a given goal, paying attention to the needs of a known audience.
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	<ul style="list-style-type: none"> The child can understand that search engines select pages according to keywords found in the content. <p>Digital Literacy</p> <ul style="list-style-type: none"> The child can use digital technology safely and show respect for others when working online. The child can recognise unacceptable behaviour when using digital technology. Know who to talk to about concerns and inappropriate behaviour in school. The child can decide whether a web page is relevant for a given purpose or question. The child can contribute to a shared wiki. 	<ul style="list-style-type: none"> The child can use a standard search engine to find information. The child can understand that search engines rank pages according to relevance. <p>Digital Literacy</p> <ul style="list-style-type: none"> The child can demonstrate that they can act responsibly when using computers. The child can understand the difference between acceptable and unacceptable behaviours when using digital technology. Know who to talk to about concerns and inappropriate behaviour at home or in school. The child can decide whether digital content is relevant for a given purpose or question. The child can work collaboratively with classmates on a shared wiki. 	<ul style="list-style-type: none"> The child can collect, analyse and present data. The child can use filters to make more effective use of a standard search engine. The child can understand that search engines use a cached copy of the crawled web to select and rank results. <p>Digital Literacy</p> <ul style="list-style-type: none"> The child can demonstrate that they can act responsibly when using the internet. The child can discuss the consequences of particular behaviours when using digital technology. Know how to report concerns and inappropriate behaviour in a range of contexts. The child can decide whether digital content is reliable and unbiased. The child can work collaboratively on a shared wiki, making changes to others' pages.
Year 5	<p>Computer Science</p> <ul style="list-style-type: none"> The child can design and write a program using a block language based on their own ideas. 	<p>Computer Science</p> <ul style="list-style-type: none"> The child can design, write and debug a program using a block language based on their own ideas. 	<p>Computer Science</p> <ul style="list-style-type: none"> The child can design, write and debug a program using a block language based on their own ideas; the child can use iterative

	<ul style="list-style-type: none"> • The child can understand that physical systems can be controlled by a computer. • The child can identify component parts of a problem. • The child can use sequence and repetition in programs. • The child can write a program that accepts keyboard input and produces on-screen output. • The child can predict the outcomes of a rule-based algorithm. • The child can spot errors in algorithms. • The child can understand the internet as a network of networks. • The child can show an understanding of basic HTML (hypertext mark-up language). <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use and combine a range of programs on a computer. • The child can design and create programs on a computer. • The child can evaluate information. • The child can use a standard search engine to find information. 	<ul style="list-style-type: none"> • The child can experiment with computer control applications. • The child can plan a solution to a problem using decomposition. • The child can use sequence, selection and repetition in programs. • The child can write a program that accepts keyboard and mouse input and produces output on screen and through speakers. • The child can explain a rule-based algorithm in their own words. • The child can use logical reasoning to detect errors in algorithms. • The child can understand how data routing works on the internet. • The child can understand how web pages are created and transmitted. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use and combine a range of programs on multiple devices. • The child can design and create programs on a computer in response to a given goal. 	<p>development to make improvements.</p> <ul style="list-style-type: none"> • The child can develop their own simple computer control application. • The child can solve problems using decomposition, tackling each part separately. • The child can use sequence, selection, repetition and variables in programs. • The child can show an awareness of the importance of good user-interface design when developing a program. • The child can give a clear and precise explanation of a rule-based algorithm. • The child can use logical reasoning to detect and correct errors in algorithms. • The child can explain how internet routing adapts to faults in the network. • The child can show an understanding of how content management systems are used on the web. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can select, use and combine a range of programs on multiple devices.
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	<ul style="list-style-type: none"> • The child can understand that search engines use a cached copy of the crawled web to select results. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can demonstrate that they can act responsibly when using computers. • The child can understand the difference between acceptable and unacceptable behaviour when using digital technology. • Know who to talk to about concerns and inappropriate behaviour at home or in school. • The child can decide whether digital content is relevant for a given purpose or question. • The child can contribute to a class website or blog. 	<ul style="list-style-type: none"> • The child can analyse and evaluate information. • The child can use filters to make more effective use of a standard search engine. • The child can understand that search engines use a cached copy of the crawled web to select and rank results. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can demonstrate that they can act responsibly when using the internet. • The child can discuss the consequences of particular behaviours when using digital technology. • Know how to report concerns and inappropriate behaviour in a range of contexts. • The child can decide whether digital content is reliable and unbiased. • The child can work collaboratively with classmates on a class website or blog. 	<ul style="list-style-type: none"> • The child can design and create programs on a computer in response to a given goal and paying attention to the needs of a known audience. • The child can analyse and evaluate information from multiple sources. • The child can use advanced search options to make more effective use of a standard search engine. • The child can understand how search engines build a cached copy of the web using HTTP and web-crawler programs. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can show that they can think through the consequences of their actions when using digital technology. • The child can identify principles underpinning acceptable use of digital technologies. • Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts. • The child can form an opinion about the effectiveness of digital content. • The child can provide constructively critical feedback to
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			classmates in a class website or blog project.
Year 6	<p>Computer Science</p> <ul style="list-style-type: none"> • The child can design and write a program using a second programming language based on their own ideas. • The child can experiment with computer control applications. • The child can plan a solution to a problem using decomposition. • The child can use sequence, selection and repetition in programs. • The child can write a program that accepts keyboard and mouse or touch screen input and produces output on screen and through speakers. • The child can explain an algorithm using sequence, repetition and selection in their own words. • The child can use logical reasoning to detect errors in algorithms. • The child can understand that computers can communicate through network technologies other than the internet. 	<p>Computer Science</p> <ul style="list-style-type: none"> • The child can design, write and debug a program using a second programming language based on their own ideas. • The child can design, write and debug their own computer control application. • The child can solve problems using decomposition, tackling each part separately. • The child can use sequence, selection, repetition and variables in programs. • The child can write a program that accepts inputs other than keyboard and mouse and produces outputs other than screen or speakers. • The child can give clear and precise logical explanations of a number of algorithms. • The child can use logical reasoning to detect and correct errors in algorithms (and programs). • The child can understand how mobile phone or other networks operate. 	<p>Computer Science</p> <ul style="list-style-type: none"> • The child can design, write and debug a program using a second programming language based on their own ideas, using iterative development to make improvements. • The child can design, write and debug own computer control application, using iterative development to make improvements. • The child can apply decomposition to help understand complex systems. • The child can use sequence, selection, repetition, variables and procedures in programs. • The child can use principles of good user-interface design, including accessibility, when developing programs. • The child can use logical reasoning to explain how more complex algorithms work. • The child can suggest ways in which the efficiency of algorithms and programs can be improved.

	<ul style="list-style-type: none"> • The child can understand the difference between a domain name and an IP address. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can use and combine a range of programs on multiple devices. • The child can create systems in response to a given goal. • The child can analyse data. • The child can appreciate that a range of different search technologies are available. • The child can appreciate that search engines rank results based on in-bound links to a page. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can demonstrate that they can act responsibly when using the internet. • The child can discuss the consequences of particular behaviours when using digital technology. • Know how to report concerns and inappropriate behaviour in a range of contexts. • The child can decide whether digital content is reliable and unbiased. 	<ul style="list-style-type: none"> • The child can understand how domain names are converted into IP addresses on the internet. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can select, use and combine a range of programs on multiple devices. • The child can design and create systems in response to a given goal. • The child can analyse and evaluate data. • The child can make use of a range of search engines appropriate to finding information that is required. • The child can appreciate that search engines rank pages based on the number and quality of in-bound links. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can show that they can think through the consequences of their actions when using digital technology. • The child can identify principles underpinning acceptable use of digital technologies. • Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts. 	<ul style="list-style-type: none"> • The child can understand differences between network technologies. • The child can show awareness of some of the security implications of DNS lookups. <p>Information Technology</p> <ul style="list-style-type: none"> • The child can show some understanding of the differences between, and relative merits of, different applications, operating systems and hardware. • The child can design and create systems in response to a given goal, paying attention to the needs of a known audience. • The child can analyse, evaluate and interpret data, being aware of the limitations of any conclusions drawn. • The child can appreciate that much information cannot easily be found using search engines. • The child can appreciate that search engines now use many additional 'signals' to provide more relevant results. <p>Digital Literacy</p> <ul style="list-style-type: none"> • The child can consider critically some of the wider implications of the use of digital technology.
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	<ul style="list-style-type: none"> • The child can use online tools to plan a collaborative project. 	<ul style="list-style-type: none"> • The child can form an opinion about the effectiveness of digital content. • The child can use online tools to plan and carry out a collaborative project. 	<ul style="list-style-type: none"> • The child can consider questions of ethics and morality in relation to digital technology. • Consider how they would determine the best way to address particular concerns or inappropriate behaviour. • The child can consider principles they can use to evaluate digital content. • The child can use online tools to plan, carry out and evaluate a collaborative project.
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Our Implementation

Organisation of topics

We follow the Switched On Computing scheme of work. This scheme covers all aspects of computing and is updated to reflect the fact that in this ever-evolving digital world, pupils come to school with more technology skills and experiences than before. There is a built in progression in the scheme. For example, in programming Year 1 program a simple toy, Year 2 program a sprite, by Year 5 pupils design and create a chase game and Year 6 move onto to learning Python. E-safety is woven throughout the scheme with a focus in each unit. There are also specific e-safety units such as looking at the security of passwords in Year 5. We start each year with a lesson on e-safety and pupils sign a code of conduct.

We teach a balanced curriculum involving both 'skills' lessons and also using pupils' ICT capabilities to support learning across the curriculum. For example, pupils research a history topic or investigate a particular issue on the internet and present their findings within a specific program. Pupils use the collaboration aspect of our Pupil Portal to enhance group work. In science, pupils use data sensing equipment or the computer to model a problem or collate evidence through digital imagery. We encourage pupils to explore ways in which the use of computing can improve and enhance their work, for example, how a piece of writing can be edited or how the presentation of a piece of work can be improved by altering text, adding graphics, using immersive reader and identifying parts of speech. Tools on desktops like the visualiser and iPad reflector are used to share and improve work. We aim for ICT to enhance all aspects of teaching and learning.

There is progression within each unit with skills being built up lesson by lesson towards a final program or outcome. For example in Year 5 Scratch, pupils create a scoring game. They start by revising how to make a sprite and a background and then learn how to animate the sprite, add another one and add a scoring system.

In each lesson, there are opportunities for revising and recapping key knowledge. Strategies used include chanting key facts, low stakes quizzes and paired discussion where one pupil teaches another.

Although skills are modelled and taught clearly, teachers are careful not to over model (especially with debugging strategies) as we want to develop pupils' independence and resilience when using technology.

We are keen for our pupils to try out programs at home and pupils have access to the programs used through our online pupil portal.

Curzon Long Term Curriculum Planning for Computing (Switched On Computing)

In EYFS pupils have discrete computing sessions each week. Computing is included in continuous provision. For example, children use iPads to take photographs of creatures in the woods and program Bee Bots to go round a course.

Our EYFS computing curriculum provides rich opportunities for pupils to develop skills in many areas e.g.

Self-Regulation

- Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate;
- Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions.

Managing Self

- Be confident to try new activities and show independence, resilience and perseverance in the face of challenge;

Building Relationships

- Work and play cooperatively and take turns with others;

Gross Motor skills

Negotiate space and obstacles safely, with consideration for themselves and others (beebots)

Fine Motor Skills

Use a range of small tools (mouse control, typing skills)

Understanding the World

Fostering understanding of technology around them

The Natural World

Explore the natural world around them, making observations and drawing pictures of animals and plants;

Creating with Materials

Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function (creating photographs)

KS1

Computing is taught on a rolling 2 year programme in Key Stage 1.

Barn Owls (YR and Y1) cover Year 2 Switched on Computing in Year A and Year 1 Switched on computing in Year B.

Snowy Owls (Y1 and Y2) cover Year 2 Switched on Computing in Year A and Year 1 Switched on computing in Year B.

Overview of units

KS1 is taught over a two year rolling programme adapting Switched on Computing units from Years 1 and 2.

Year A

Autumn	Spring	Summer
E safety We are astronauts -	We are photographers – photography We are researchers – researching	We are detectives - using emails We are zoologists - collecting data

<p>programming on screen (Y1 – using sprite, Y2 – programming) We are game testers - how do computer games work? (Y1 – whole class, Y2 – algorithms)</p>		<p>(Y1 – whole class, Y2 – individual)</p>
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Year B

Autumn	Spring	Summer
<p>E safety We are treasure hunters - programmable toys (Y1 – Beebots, Y2 – iPad apps) We are TV chefs - E-books (Y1 – record, Y2 – edit)</p>	<p>We are painters - using paint to illustrate (Y1 – use paint, Y2 – create a scene from a story) We are collectors - finding images on the web (Y1 – basic PowerPoint skills, Y2 – editing, transitions)</p>	<p>We are storytellers - recording a story (Y1 – iPads, Y2 – edit) We are celebrating - digital cards (Y1 – creating a card, Y2 – word skills, spellcheck, importing pictures)</p>

<p>1.4 We are collectors Finding images using the web</p>	<ul style="list-style-type: none"> • Find and use pictures on the web. • Know what to do if they encounter pictures that cause concern. • Group images on the basis of a binary (yes/no) question. • Organise images into more than two groups according to clear rules. • Sort (order) images according to some criteria. • Ask and answer binary (yes/no) questions about their images. 	<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. • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • 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. • Recognise common uses of information technology beyond school. 	<p>Software: Web browser, Microsoft PowerPoint® or IWB Software Apps: Web browser, Keynote or Explain Everything</p>	<p>Internet connection, laptop/desktop computers</p>
<p>1.5 We are storytellers Producing a talking book</p>	<ul style="list-style-type: none"> • Use sound recording equipment to record sounds. • Develop skills in saving and storing sounds on the computer. • Develop collaboration skills as they work together in a group. • Understand how a talking book differs from a paper-based book. • Talk about and reflect on their use of ICT. • Share recordings with an audience. 	<ul style="list-style-type: none"> • 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 ... 	<p>Software: Microsoft PowerPoint®/2Create A Story/IWB software Apps: Keynote/Explain Everything/Book Creator</p>	<p>Computers/tablets, MP3 recorders/microphones</p>
<p>1.6 We are celebrating Creating a card digitally</p>	<ul style="list-style-type: none"> • Develop basic keyboard skills, through typing and formatting text. • Develop basic mouse skills. • Use the web to find and select images. • Develop skills in storing and retrieving files. • Develop skills in combining text and images. • Discuss their work and think about whether it could be improved. 	<ul style="list-style-type: none"> • 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>Software: Microsoft PowerPoint®/Microsoft Word®/Clicker 7 Apps: Pages/Keynote, Brushes Redux/Sketchbook Express</p>	<p>Laptops/computers/tablets, printer</p>

<p>2.4 We are researchers Researching a topic</p>	<ul style="list-style-type: none"> • Develop collaboration skills through working as part of a group. • Develop research skills through searching for information on the internet. • Improve note-taking skills through the use of mind mapping. • Develop presentation skills through creating and delivering a short multimedia presentation. 	<ul style="list-style-type: none"> • 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>Software: FreeMind, bubbl.us, Google Custom Search, web browser, Microsoft PowerPoint®</p> <p>Apps: iThoughtsHD, Safari, Keynote, Popplet Lite, bubbl.us</p>	<p>Laptop or desktop computers or tablets, internet connection</p>
<p>2.5 We are detectives Collecting clues</p>	<ul style="list-style-type: none"> • Understand that email can be used to communicate. • Develop skills in opening, composing and sending emails. • Gain skills in opening and listening to audio files on the computer. • Use appropriate language in emails. • Develop skills in editing and formatting text in emails. • Be aware of online safety issues when using email. 	<ul style="list-style-type: none"> • 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>Software: Your school's email system, Microsoft Excel® Google Sheets</p> <p>Apps: Mail, Numbers, Google Sheets</p>	<p>Desktop or laptop computers or tablets; network access</p>
<p>2.6 We are zoologists Collecting data about bugs</p>	<ul style="list-style-type: none"> • Sort and classify a group of items by answering questions. • Collect data using tick charts or tally charts. • Use simple charting software to produce pictograms and other basic charts. • Take, edit and enhance photographs. • Record information on a digital map. 	<ul style="list-style-type: none"> • 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>Software: Microsoft Excel®/Google Sheets/IWB software, Picasa/Photo Gallery, Google My Maps/Google Earth</p> <p>Apps: Numbers/Google Sheets, Snapseed, RunKeeper</p>	<p>Desktop or laptop computers with digital cameras/tablets, internet connection</p>

KS2

Unit	Expectations	Computing PoS	Software/Apps	Hardware
<p>3.1 We are programmers Programming an animation</p>	<ul style="list-style-type: none"> • Create an algorithm for an animated scene in the form of a storyboard. • Write a program in Scratch to create the animation. • Correct mistakes in their animation programs. 	<ul style="list-style-type: none"> • Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. • Use sequence ... in programs; work with variables and various forms of input and output. • Use logical reasoning to detect and correct errors in algorithms and programs. • Select, use and combine a variety of software ... to design and create ... content that accomplish(es) given goals, including ... presenting ... information. 	<p>Software: Scratch (recommended), Snap!, Microsoft PowerPoint®, Tux Paint, Scratch Jnr Apps: Pyonkee</p>	<p>Laptop or desktop computers (recommended) or tablets, cameras (optional), microphones (optional)</p>
<p>3.2 We are bug fixers Finding and correcting bugs in programs</p>	<ul style="list-style-type: none"> • Develop a number of strategies for finding errors in programs. • Build up resilience and strategies for problem solving. • Increase their knowledge and understanding of Scratch. • Recognise a number of common types of bug in software. 	<ul style="list-style-type: none"> • Debug programs that accomplish specific goals. • 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. 	<p>Software: Scratch, Snap!, Screencast-o-matic (if appropriate) Apps: Snap! in the web browser (Scratch requires Adobe Flash® Player, which is not available on iPad), Pyonkee</p>	<p>Laptop/desktop computers, microphone (if appropriate)</p>
<p>3.3 We are presenters Videoing performance</p>	<ul style="list-style-type: none"> • Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing. • Edit video, including adding narration and editing clips by setting in/out points. • Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length. 	<ul style="list-style-type: none"> • 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. • Work with various forms of input and output. • Use technology safely, respectfully and responsibly. 	<p>Software: Microsoft Windows Movie Maker® or iMovie, Kinovea/Dartfish Apps: iMovie/Coach's Eye</p>	<p>Digital cameras, flip cameras (or similar), tablet computers/iPod Touch or similar</p>

<p>3.4 We are vloggers Making and sharing a short screencast presentation</p>	<ul style="list-style-type: none"> • Use a search engine to learn about a new topic. • Plan, design and deliver an interesting and engaging presentation. • Search for and evaluate online images. • Create their own original images. • Create a video slidecast of a narrated presentation. • Develop understanding of how the internet, the web and search engines work. 	<ul style="list-style-type: none"> • Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web. • 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 content that accomplish given goals, including collecting, analysing, evaluating and presenting information. • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 	<p>Software: Google, creative commons search engines, PowerPoint / Google Presentation, screencast-omatic / QuickTime Player Apps: Safari, Explain Everything, Adobe Voice</p>	<p>Laptops/desktop PCs with microphones/tablet computers</p>
<p>3.5 We are communicators Communicating safely on the internet</p>	<ul style="list-style-type: none"> • Develop a basic understanding of how email works. • Gain skills in using email. • Be aware of broader issues surrounding email, including 'netiquette' and online safety. • Work collaboratively with a remote partner. • Experience video conferencing. 	<ul style="list-style-type: none"> • 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. • 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. 	<p>Software: Email system (your school's own system, Gmail or another system), video conferencing software (Skype, Google Hangouts or Janet video conferencing), presentation software Apps: Skype, FaceTime, Hangouts</p>	<p>Webcam and speakers</p>
<p>3.6 We are opinion pollsters Collecting and analysing data</p>	<ul style="list-style-type: none"> • Understand some elements of survey design. • Understand some ethical and legal aspects of online data collection. • Use the web to facilitate data collection. • Gain skills in using charts to analyse data. • Gain skills in interpreting results. 	<ul style="list-style-type: none"> • 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. • 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. 	<p>Software: Web browser, Google Forms, Google Sheets and Google Slides/InspireData®/Microsoft Excel® and Microsoft Word®/Freemind Apps: Google Drive/web browser</p>	<p>Laptop or desktop computer with internet connection</p>

Unit	Expectations	Computing PoS	Software/Apps	Hardware
4.1 We are software developers Developing a simple educational game	<ul style="list-style-type: none"> • Develop an educational computer game using selection and repetition. • Understand and use variables. • Start to debug computer programs. • Recognise the importance of user interface design, including consideration of input and output. 	<ul style="list-style-type: none"> • Design, write and debug programs that accomplish specific goals. • 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. 	Software: Scratch/Snap! Apps: Pyonkee	Laptop/desktop computer, microphones (not essential)
4.2 We are toy designers Prototyping an interactive toy	<ul style="list-style-type: none"> • Design and make an on-screen prototype of a computer-controlled toy. • Understand different forms of input and output (such as sensors, switches, motors, lights and speakers). • Design, write and debug the control and monitoring program for their toy. 	<ul style="list-style-type: none"> • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. • Use sequence, selection, and repetition in programs; work with 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. 	Software: Scratch/Snap! Apps: Pyonkee	Laptops/computers, microphones and speakers, BBC micro:bit and Raspberry Pi
4.3 We are musicians Producing digital music	<ul style="list-style-type: none"> • Use one or more programs to edit music. • Create and develop a musical composition, refining their ideas through reflection and discussion. • Develop collaboration skills. • Develop an awareness of how their composition can enhance work in other media. 	<ul style="list-style-type: none"> • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. • Understand computer networks including the internet; ... and the opportunities they offer for communication and collaboration. • 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. 	Software: Isle of Tune, Audacity®, LMMS/ GarageBand, MuseScore (optional), SoundBox Apps: Isle of Tune, GarageBand	Computers or tablets, microphones, midi instruments, if available

<p>4.4 We are HTML editors Editing and writing HTML</p>	<ul style="list-style-type: none"> • Understand some technical aspects of how the internet makes the web possible. • Use HTML tags for elementary mark up. • Use hyperlinks to connect ideas and sources. • Code up a simple web page with useful content. • Understand some of the risks in using the web. 	<ul style="list-style-type: none"> • 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 technology safely, respectfully and responsibly; know a range of ways to report concerns and unacceptable behaviour. • Use and combine a variety of software (including internet services) to accomplish given goals, including presenting information. 	<p>Software: Firefox, Brackets, Chrome developer tools</p> <p>Apps: Safari, Koder</p>	<p>Laptop/desktop computers</p>
<p>4.5 We are co-authors Producing a wiki</p>	<ul style="list-style-type: none"> • Understand the conventions for collaborative online work, particularly in wikis. • Be aware of their responsibilities when editing other people's work. • Become familiar with Wikipedia, including potential problems associated with its use. • Practise research skills. • Write for a target audience using a wiki tool. • Develop collaboration skills. • Develop proofreading skills. 	<ul style="list-style-type: none"> • Solve problems by decomposing them into smaller parts. • 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. • Use ... a variety of software (including internet services) ... to ... create ... content ... including ... presenting information. • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 	<p>Software: Learning platform wiki tools/ MediaWiki/Google Sites/ other hosted wiki</p> <p>Apps: Web browser (e.g. Safari), Wikipedia app</p>	<p>Computers and internet connection, web server (if hosting MediaWiki)</p>
<p>4.6 We are meteorologists Presenting the weather</p>	<ul style="list-style-type: none"> • Understand different measurement techniques for weather, both analogue and digital. • Use computer-based data logging to automate the recording of some weather data. • Use spreadsheets to create charts • Analyse data, explore inconsistencies in data and make predictions • Practise using presentation software and, optionally, video. 	<ul style="list-style-type: none"> • Work with variables and various forms of input and output. • Use logical reasoning to explain how some simple algorithms work. • 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. 	<p>Software: Microsoft Excel®/Google Sheets, web browser, Microsoft PowerPoint®/IWB software</p> <p>Apps: Weather Station by Netatmo, Weather Station.UK, Numbers, Keynote/Explain Everything</p>	<p>Equipment for measuring weather</p>

Unit	Expectations	Computing PoS	Software/Apps	Hardware
5.1 We are game developers Developing an interactive game	<ul style="list-style-type: none"> • Create original artwork and sound for a game. • Design and create a computer program for a computer game, which uses sequence, selection, repetition and variables. • Detect and correct errors in their computer game. • Use iterative development techniques (making and testing a series of small changes) to improve their game. 	<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. • 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... 	Software: Scratch/ Snap! (or Kodu) Apps: Pyonkee	Desktop/laptop computers, microphones
5.2 We are cryptographers Cracking codes	<ul style="list-style-type: none"> • Be familiar with semaphore and Morse code. • Understand the need for private information to be encrypted. • Encrypt and decrypt messages in simple ciphers. • Appreciate the need to use complex passwords and to keep them secure. • Have some understanding of how encryption works on the web. 	<ul style="list-style-type: none"> • 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 technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 	Software: Scratch 2.0/Snap!, The Black Chamber (website) Apps: The Black Chamber in the web browser, Pyonkee	Laptop/desktop computers
5.3 We are artists Fusing geometry and art	<ul style="list-style-type: none"> • Develop an appreciation of the links between geometry and art. • Become familiar with the tools and techniques of a vector graphics package. • Develop an understanding of turtle graphics. • Experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers. • Develop some awareness of computer-generated art, in particular fractal-based landscapes. 	<ul style="list-style-type: none"> • 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. • 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. 	Software: Inkscape/ Adobe Illustrator/ CorelDRAW, Scratch/ Snap!, Terragen, Logo Apps: Adobe Ideas/neu. draw, Pyonkee, i-Logo	Laptop or desktop computers/tablets

<p>5.4 We are web developers Creating a website about cyber safety</p>	<ul style="list-style-type: none"> • Develop their research skills to decide what information is appropriate. • Understand some elements of how search engines select and rank results. • Question the plausibility and quality of information. • Develop and refine their ideas and text collaboratively. • Develop their understanding of online safety and responsible use of technology. 	<ul style="list-style-type: none"> • 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. 	<p>Software: Google, Bing, Google Sites/wiki tool in the school's learning platform/WordPress/Adobe Slate</p> <p>Apps: Google Search app, Google Sites via browser/WordPress/Adobe Slate</p>	<p>Desktop or laptop computers/tablets</p>
<p>5.5 We are bloggers Sharing experiences and opinions</p>	<ul style="list-style-type: none"> • Become familiar with blogs as a medium and a genre of writing. • Create a sequence of blog posts on a theme. • Incorporate additional media. • Comment on the posts of others. • Develop a critical, reflective view of a range of media, including text. 	<ul style="list-style-type: none"> • 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. • 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. • ... be discerning in evaluating digital content. 	<p>Software: WordPress/Blogger/learning platform blogging tool or similar, GIMP, Audacity®, Microsoft Windows Movie Maker®</p> <p>Apps: WordPress, Camera, Snapseed</p>	<p>Computers, digital cameras, audio recorders/tablets</p>
<p>5.6 We are architects Creating a virtual space</p>	<ul style="list-style-type: none"> • Understand the work of architects, designers and engineers working in 3D. • Develop familiarity with a simple CAD (computer aided design) tool. • Develop spatial awareness by exploring and experimenting with a 3D virtual environment. • Develop greater aesthetic awareness. 	<ul style="list-style-type: none"> • 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. 	<p>Software: Trimble SketchUp (used for 3D modelling), Screencast-o-matic (for final screencast), Minecraft</p> <p>Apps: Home Design 3D/3dVAS, Sketchup Viewer</p>	<p>Laptops/ computers</p>

Unit	Expectations	Computing PoS	Software/Apps	Hardware
6.1 We are adventure gamers Making a text-based adventure game	<ul style="list-style-type: none"> Learn some of the syntax of a text-based programming language. Use commands to display text on screen, accept typed user input, store and retrieve data using variables and select from a list. Plan a text-based adventure with multiple 'rooms' and user interaction. Thoroughly debug the program. 	<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. 	Software: Python (using the IDLE editor) or trinket.io Apps: Pythonista or Python 3.4 for iOS (iOS), SL4A (Android), or trinket.io via Safari or other browser Bluetooth keyboards are recommended for tablets	Laptop/desktop computers. Python is installed as standard on the Raspberry Pi.
6.2 We are computational thinkers Mastering algorithms for searching, sorting and mathematics	<ul style="list-style-type: none"> Develop the ability to reason logically about algorithms. Understand how some key algorithms can be expressed as programs. Understand that some algorithms are more efficient than others for the same problem. Understand common algorithms for sorting and searching. Appreciate algorithmic approaches to problems in mathematics. 	<ul style="list-style-type: none"> Design, write and debug programs that accomplish specific goals. 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. 	Software: Scratch and Snap! Apps: Pyonkee, and Snap! using Safari	Laptop/desktop computers; some 'unplugged' resources.
6.3 We are advertisers Creating a short television advert	<ul style="list-style-type: none"> Think critically about how video is used to promote a cause. Storyboard an effective advert for a cause. Work collaboratively to shoot suitable original footage and source additional content, acknowledging intellectual property rights. Work collaboratively to edit the assembled content to make an effective advert. 	<ul style="list-style-type: none"> 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. 	Software: Movie Maker®/iMovie Apps: iMovie	Desktop/laptop computers; digital video cameras/digital cameras/tablet computers.

<p>6.4 We are network technicians Exploring computer networks including the internet</p>	<ul style="list-style-type: none"> • Appreciate that computer networks transmit and receive information digitally. • Understand the basic hardware needed for computer networks to work. • Understand key features of internet communication protocols. • Develop a basic understanding of how domain names are converted to numerical IP addresses. 	<ul style="list-style-type: none"> • 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 technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 	<p>Software: For <i>Extension</i> activities: the pupils could use the Command Prompt in Windows to access simple tools such as ping, ipconfig, nslookup, tracert. Open Visual Traceroute (or web-based equivalents) and/or a network emulator (GS3)</p> <p>Apps: Web-based equivalent tools via the browser, CISCO Packet Tracer Mobile.</p>	<p>Desktop/laptop computers; Raspberry Pi.</p>
<p>6.5 We are travel writers Using media and mapping to document a trip</p>	<ul style="list-style-type: none"> • Research a location online using a range of resources appropriately. • Understand the safe use of mobile technology, including GPS. • Capture images, audio and video while on location. • Showcase shared media content through a mapping layer. 	<ul style="list-style-type: none"> • 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. 	<p>Software: Google Maps/Google Earth, Pixlr, Movie Maker®, Audacity, Google Sites</p> <p>Apps: Google Earth, Snapseed, iMovie, Garageband, TrackRec</p>	<p>Tablet computers and/or smartphones, desktop/laptop computers, web server or online hosting.</p>
<p>6.6 We are publishers Creating a yearbook or magazine</p>	<ul style="list-style-type: none"> • Manage or contribute to large collaborative projects, facilitated using online tools. • Write and review content. • Source digital media while demonstrating safe, respectful and responsible use. • Design and produce a high-quality print document. 	<ul style="list-style-type: none"> • Understand computer networks including the internet 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. 	<p>Software: Microsoft Publisher/Scribus/ iBook Author, Pixlr, Microsoft Word/ Google Docs, Adobe Acrobat, Google Drive</p> <p>Apps: Pages/Book Creator, Snapseed, Google Drive</p>	<p>Laptop/desktop computers, digital cameras, iPads.</p>

In Year 6, we have added a unit on e-safety at the start of the year as we feel this is relevant to our pupils' needs. We have also shortened the unit on computational thinking to allow children more time to work on using the Python programme. We have moved the advertising unit to the second half of the spring term so that it ties in better with the Geography topic on Fair Trade. We teach the blogging unit in Year 6 as we feel that using online forums respectfully to post messages and add comments is a good preparation for secondary school. We have moved the travel writer programme to fit with our Year 5 London topic in Geography.

Assessment

Strategies such as, true/false, thumbs up/down and low stakes quizzes are used to assess understanding during lessons. Teachers also observe and assess pupils' programming skills. They use their findings to provide support during lessons or to adapt future lessons. Summative data, based on the progression grids, is recorded on Bromcom and analysed by the subject leader termly.

Impact

Summative data shows that the majority of pupils, including SEND, are working at the expected standard for computing. Our monitoring shows that pupils can explain the importance of e-safety and know how to get help if needed.

By the time our pupils leave Curzon they will:

- be competent, respectful and responsible users of ICT, equipped for life in digital society
- know how to keep themselves and others safe online and what to do if there are any issues
- be resilient and confident problem-solvers who are independent with their use of technology
- have an understanding of how technology works
- be able to program effectively and use digital media creatively

