

Curzon Computing Curriculum September 2021

Curzon specific aims of Computing-our intent

Our aim at Curzon is to develop the whole child. 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 off line. This vision is embedded across the curriculum and underpins Curzon's ethos.

E-Learning at Curzon creates active, respectful, safe 21st century learners

Technology is integral to school life and used across the curriculum.

Learners develop resilience and become confident problem-solvers who are independent with their use of technology.

Children are equipped to become respectful and responsible digital citizens.

Children have a strong awareness of how to stay safe when using technology and the internet.

Technology is used to promote links with parents and the wider community.

Organisation of topics

We follow the Rising Stars 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 children come to school with more technology skills and experiences than before. There is built in progression in the scheme. For example in programming Year 1 programme a simple toy, Year 2 programme a sprite, by Year 5 pupils design and create a chase games and Year 6 move onto to learning Python. E safety is woven throughout the programme 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 children sign a code of conduct.

Implementation

We teach a balanced curriculum involving both 'skills' lessons and also using children's ICT capabilities to support teaching across the curriculum. For example, children might research a history topic or investigate a particular issue on the internet and present their findings within a specific programme. Children might use the collaboration aspect of our Pupil Portal to enhance group work. In science, children might 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 work and improve. We aim for ICT to enhance all aspects of teaching and learning.

How the curriculum is tailored to our pupils

We are mindful of our local context and ensure that these areas are given emphasis in our teaching.

- Increasing cases of online bullying and abuse.
- Increasing cases of children accessing inappropriate websites/materials at home

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

EYFS computing is taught mainly through discrete lessons and continuous provision covering the following key skills:

Our EYFS computing curriculum provides rich opportunities for children 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 basic computer/iPad skills 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.

Progression of Knowledge and Skills in Computing

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.			
Knowledge	Control a simple program on a computer.	<p>To begin to understand what algorithms are.</p> <p>To begin to understand how algorithms are implemented as programs on digital devices; and that programs execute by following precise and</p>	<p>To be secure with understanding what algorithms are.</p> <p>To be secure in their understanding of how algorithms are implemented as programs on digital devices; and that programs execute by following</p>	<p>To begin to solve problems by decomposing them into smaller parts.</p> <p>To begin to use sequence, selection and repetition in programs; work with variables.</p> <p>To begin working with various forms of input and output.</p> <p>To begin to use logical reasoning to explain how some simple algorithms work.</p>	<p>To begin to design, write and debug programs that accomplish specific goals.</p> <p>To begin controlling or simulating physical systems.</p> <p>To begin to solve problems by decomposing them into smaller parts.</p> <p>To begin using sequence, selection and repetition in programs; work with variables.</p>	<p>To begin to be secure in designing, writing and debugging programs that accomplish specific goals.</p> <p>To begin to be secure in controlling or simulating physical systems.</p> <p>To begin to be secure with solving problems by decomposing them into smaller parts.</p> <p>To begin to be secure using sequence, selection and repetition</p>	<p>To be secure in designing, writing and debugging programs that accomplish specific goals.</p> <p>To be secure with controlling or simulating physical systems.</p> <p>To be secure in solving problems by decomposing them into smaller parts.</p> <p>To be secure in using sequence, selection and repetition in programs; work with variables.</p>

		<p>unambiguous instructions.</p> <p>To begin creating and debugging simple programs.</p> <p>To start using logical reasoning to predict the behaviour of simple programs.</p>	<p>precise and unambiguous instructions.</p> <p>To be secure in creating and debugging simple programs.</p> <p>To be secure in using logical reasoning to predict the behaviour of simple programs.</p>	<p>To begin using logical reasoning to detect and correct errors in algorithms and programs.</p>	<p>To begin working with various forms of input and output.</p> <p>To begin to use logical reasoning to explain how some simple algorithms work.</p> <p>To begin to use logical reasoning to detect and correct errors in algorithms and programs.</p>	<p>in programs; work with variables.</p> <p>To begin to be secure with various forms of input and output.</p> <p>To begin to be secure using logical reasoning to explain how some simple algorithms work.</p> <p>To begin to be secure with logical reasoning to detect and correct errors in algorithms and programs.</p>	<p>To be secure in working with various forms of input and output.</p> <p>To be secure with using logical reasoning to explain how some simple algorithms work.</p> <p>To be secure in using logical reasoning to detect and correct errors in algorithms and programs.</p>
Skills	<p>-I can program a toy (Bee-Bot) using simple instructions</p> <p>-I understand that I control the programmable toy</p> <p>-I can use a suitably aged program on a computer effectively</p>	<p>-I understand that a programmable toy can be controlled by inputting a sequence of instructions.</p> <p>-I can develop and record sequences of instructions as an algorithm.</p>	<p>-I have a clear understanding of algorithms as sequences of instructions</p> <p>-I can convert simple algorithms to programs</p> <p>-I can predict what a simple program will do</p>	<p>-I can create an algorithm for an animated scene in the form of a storyboard</p> <p>-I can write a program in Scratch to create the animation</p> <p>-I can correct mistakes in animation programs</p> <p>-I can develop a number of strategies for finding errors in programs</p> <p>-I have an increasing knowledge of Scratch</p>	<p>-I can develop an educational game using selection and repetition</p> <p>-I understand and can use variables</p> <p>-I am beginning to debug computer programs</p> <p>-I can design and make an on-screen prototype of a computer-controlled toy</p> <p>-I understand different forms of input and output</p>	<p>-I can create original artwork and sound for a game</p> <p>-I can design and create a computer program for a computer game, which uses sequence, selection, repetition and variables</p> <p>-I can detect and correct errors in my computer game</p> <p>-I can use iterative development techniques</p>	<p>-I can learn some of the syntax of a text-based programming language Python</p> <p>-I can use commands to display text on screen, accept typed user input, store and retrieve data using variables and select from a list</p> <p>-I can plan a text-based adventure with multiple 'rooms' and user interaction</p>

		<ul style="list-style-type: none"> -I can program a toy to follow an algorithm -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 	<ul style="list-style-type: none"> -I can spot and fix debugs in my programs -I can describe what happens in computer games -I can use logical reasoning to make predictions -I can test my predictions 	<ul style="list-style-type: none"> -I can recognise a number of common types of bugs in software 	<ul style="list-style-type: none"> -I can design, write and debug the control and 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 	<ul style="list-style-type: none"> (making and testing a series of small changes) to improve my game -I am familiar with semaphore and morse code 	<ul style="list-style-type: none"> -I can thoroughly debug the program -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 Plus vocabulary learnt in prior years.	Scratch, Test, Predict, Algorithm, Robot, Debug, Program Plus vocabulary learnt in prior years.	Animation, Software. Code Plus vocabulary learnt in prior years.	HTML, HTTP, Hyperlink, URL, tag, input, output, simulation, interactive, prototype Plus vocabulary learnt in prior years.	Binary Code, Cipher, Decrypt, Encrypt, Morse Code, Semaphore Plus vocabulary learnt in prior years.	Python, Variable, Procedure, Syntax, Flowchart, Pseudocode, Linear Search, Random Search, Binary Search, Quicksort, Selection Sort Plus 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	Pupils should be taught to: use technology purposefully to create, organise, store, manipulate and retrieve digital content and recognise common		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.			

	computer software.	uses of information technology beyond school.					
Knowledge	Uses ICT hardware to interact with age=appropriate computer software.	To begin to use technology purposefully to organise, store and retrieve digital content.	To become secure using technology purposefully to organise, store and retrieve digital content.	To begin to select, use and combine a variety of software (including internet services) on a range of digital devices.	Select, use and combine a variety of software (including internet services) on a range of digital devices.	To begin to be secure with selecting, using and combining a variety of software (including internet services) on a range of digital devices.	To be secure with selecting, using and combining a variety of software (including internet services) on a range of digital devices.
		To begin to recognise common uses of information technology beyond school.	To become secure with recognising common uses of information technology beyond school.	To begin to design and create a range of programs, systems and content that accomplish given goals.	Design and create a range of programs, systems and content that accomplish given goals.	To begin to be secure in designing and creating a range of programs, systems and content that accomplish given goals.	To be secure with designing and creating a range of programs, systems and content that accomplish given goals.
		To begin using technology purposefully to create and manipulate digital content.	To be secure in using technology purposefully to create and manipulate digital content.	To begin collecting, analysing, evaluating and presenting data and information.	Collecting, analysing, evaluating and presenting data and information.	To begin to be secure in collecting, analysing, evaluating and presenting data and information.	To be secure with collecting, analysing, evaluating and presenting data and information.
Skills	-I know how to turn the computer on/off	-I can use different features of a video camera	-I can use a digital camera or camera app	-I am gaining skills in shooting live video, holding the camera steady and reviewing	-I can use computer-based data logging to automate the recording of some weather data	-I am developing my research skills to decide which information is appropriate	-I appreciate that computer networks transmit and receive information digitally

	<ul style="list-style-type: none"> -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 select and use appropriate tools -I can use simple sound recording equipment 	<ul style="list-style-type: none"> -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 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 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 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 the basic hardware needed for computer networks to work -I understand key features of internet communication protocols -I can shoot suitable original footage and source additional content, acknowledging intellectual property rights -I understand how domain names are converted to numerical IP addresses
Vocabulary	<p>Mouse, Keyboard, Monitor, Printer, Cursor</p>	<p>Plus vocabulary learnt in prior years.</p>	<p>Pixel, Picasa, Portfolio, Chart, Classification Key, Data, Database</p> <p>Plus vocabulary learnt in prior years.</p>	<p>Internet, The Web,</p> <p>Plus vocabulary learnt in prior years.</p>	<p>Data-logging, spreadsheet, sample, software, copyright,</p> <p>Plus vocabulary learnt in prior years.</p>	<p>Geometric, Landscape, op art, Symmetry, Tessellations, Screencast, Navigation</p> <p>Plus vocabulary learnt in prior years.</p>	<p>Command Prompt, IP address, Packet of Data, Webserver, Domain Name Service (DNS)</p> <p>Plus vocabulary learnt in prior years.</p>
Digital Literacy	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

including E-Safety							
Computing PoS		<p>Pupils should be taught to: use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> <p>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.</p>	<p>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.</p> <p>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.</p>				
Knowledge		<p>To begin to use technology purposefully to organise, store and retrieve digital content.</p> <p>To begin to use technology safely and respectfully.</p>	<p>To become secure in using technology purposefully to organise, store and retrieve digital content.</p> <p>To become secure in using technology safely and respectfully.</p>	<p>To begin to understand computer networks including the internet.</p> <p>To begin to understand how networks can provide multiple services, such as the world wide web.</p> <p>To begin to understand the opportunities networks offer for communication and collaboration.</p>	<p>To develop a deeper understanding of computer networks including the internet.</p> <p>To develop a deeper understanding of how networks can provide multiple services, such as the world wide web.</p> <p>To develop a deeper understanding of the opportunities networks offer for communication and collaboration.</p>	<p>To begin to be secure in understanding computer networks including the internet.</p> <p>To begin to be secure in understanding how networks can provide multiple services, such as the world wide web.</p> <p>To begin to be secure in understanding the opportunities networks offer for communication and collaboration.</p>	<p>To be secure in understanding computer networks including the internet.</p> <p>To be secure in understanding how networks can provide multiple services, such as the world wide web.</p> <p>To be secure in understanding the opportunities networks offer for communication and collaboration.</p>

		<p>To begin to keep personal information private.</p> <p>To begin to identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</p>	<p>To become secure in keeping personal information private.</p> <p>To become secure in identifying where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</p>	<p>To begin using search technologies effectively.</p> <p>To begin to appreciate how search results are selected and ranked.</p> <p>To begin to use technology safely, respectfully and responsibly.</p> <p>To begin to recognise acceptable/unacceptable behaviour.</p> <p>To begin to know a range of ways to report concerns and inappropriate behaviour.</p> <p>To begin to be discerning in evaluating digital content.</p>	<p>To use search technologies more effectively.</p> <p>To develop a deeper appreciation of how search results are selected and ranked.</p> <p>To continue to use technology safely, respectfully and responsibly.</p> <p>To recognise acceptable/unacceptable behaviour.</p> <p>To know a range of ways to report concerns and inappropriate behaviour.</p> <p>To be more discerning in evaluating digital content.</p>	<p>To begin to be secure in using search technologies effectively.</p> <p>To begin to be secure in appreciating how search results are selected and ranked.</p> <p>To begin to be secure in using technology safely, respectfully and responsibly.</p> <p>To begin to be secure in recognising acceptable/unacceptable behaviour.</p> <p>To begin to be secure in knowing a range of ways to report concerns and inappropriate behaviour.</p> <p>To begin to be secure in discerning in evaluating digital content.</p>	<p>To be secure in using search technologies effectively.</p> <p>To be secure in appreciating how search results are selected and ranked.</p> <p>To be secure in using technology safely, respectfully and responsibly.</p> <p>To be secure in recognising acceptable/unacceptable behaviour.</p> <p>To be secure in knowing a range of ways to report concerns and inappropriate behaviour.</p> <p>To be confident in being able to be discerning in evaluating digital content.</p>
Skills		-I am developing my basic keyboard skills	-I can edit and format text in emails	-I can use search engines to learn about a new topic	-I can write for a target audience using a wiki tool	-I am becoming familiar with blogs as a medium and a genre of writing	-I can manage or contribute to large collaborative projects,

		<p>-I am developing basic mouse skills</p> <p>-I can combine text and images</p> <p>-I can save and store my work</p> <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>-I can create and deliver a short multimedia presentation</p> <p>E-Safety</p> <p>-I am aware of how to use games safely and in balance 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 can plan, design and deliver an interesting and engaging presentation</p> <p>-I can create my own original images</p> <p>-I can create a video slidecast of a narrated presentation</p> <p>E-Safety</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>-I can use presentation software and video</p> <p>-I can use spreadsheets to create charts</p> <p>E-Safety</p> <p>-I understand some of the risks in using the web</p> <p>-I am becoming familiar with Wikipedia, including potential problems associated with its use</p> <p>-I am aware of the responsibilities when editing other people's work</p>	<p>-I can create a sequence of blog posts on a theme</p> <p>-I can incorporate additional media and comment on the posts of others</p> <p>-I am developing an understanding of turtle graphics</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</p>	<p>facilitate using online tools</p> <p>-I can write and review content</p> <p>-I can design and produce a high-quality print document</p> <p>-I can showcase shared media content through a mapping layer</p> <p>-I can storyboard an effective advert for a cause</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>
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						<p>encryption works on the web</p> <ul style="list-style-type: none"> -I decide what information is appropriate when researching -I understand how search engines select and rank results -I am continuing to develop my understanding of online safety and responsible uses of technology 	
Vocabulary		Text, image, save, find E-Safety	Address, Attachment, Email, Fact File, Evidence, Header, Presentation Google, Search Engine, Research, Password Plus vocabulary learnt in prior years.	Slidecast, presentation, Security, Email Plus vocabulary learnt in prior years.	Spreadsheets, Wikipedia, Wikipedia's Five Pillars, Reliable, Wiki Plus vocabulary learnt in prior years.	Blog, Blogroll, Copyright, Hyperlinks, Podcast. Dashboard Bias, Page Rank, Revision History, Plus vocabulary learnt in prior years.	Desktop Publishing (DTP), Typeface, Yearbook, Footage, Final Cut, Creative Commons, Advert, Rough Cut Smartphone, Metadata Plus vocabulary learnt in prior years.

YEAR	STRAND						Progression of skills and knowledge
	Programming	Computational thinking	Creativity	Computer networks	Communication/collaboration	Productivity	
	Planning, writing and testing computer programs for digital devices, from floor turtles to tablets.	Some of the computer science foundations – particularly algorithms, logical reasoning and decomposing problems into smaller parts.	Creating and refining original content using digital tools across a range of media.	Using and understanding the internet, the web and search engines, effectively and safely.	Making the most of computers and the internet for communicating with one or many, and working together on projects.	Collecting and analysing data and information using computers; organising, manipulating and presenting this to an audience.	
1	ENHANCED Unit 1.1 – We are treasure hunters	ENHANCED Unit 1.2 – We are TV chefs	ENHANCED Unit 1.3 – We are painters	NEW Unit 1.4 – We are collectors	ENHANCED Unit 1.5 – We are storytellers	ENHANCED Unit 1.6 – We are celebrating	
2	ENHANCED Unit 2.1 – We are astronauts	NEW Unit 2.2 – We are games' testers	NEW Unit 2.3 – We are photographers	ENHANCED Unit 2.4 – We are researchers	ENHANCED Unit 2.5 – We are detectives	ENHANCED Unit 2.6 – We are zoologists	
3	ENHANCED Unit 3.1 – We are programmers	NEW Unit 3.2 – We are bug fixers	ENHANCED Unit 3.3 – We are presenters	NEW Unit 3.4 – We are network engineers	ENHANCED Unit 3.5 – We are communicators	ENHANCED Unit 3.6 – We are opinion pollsters	
4	NEW Unit 4.1 – We are software developers	NEW Unit 4.2 – We are toy designers	ENHANCED Unit 4.3 – We are musicians	NEW Unit 4.4 – We are html editors	ENHANCED Unit 4.5 – We are co-authors	ENHANCED Unit 4.6 – We are meteorologists	
5	NEW Unit 5.1 – We are game developers	NEW Unit 5.2 – We are cryptographers	ENHANCED Unit 5.3 – We are artists	ENHANCED Unit 5.4 – We are web developers	ENHANCED Unit 5.5 – We are bloggers	ENHANCED Unit 5.6 – We are architects	
6	NEW Unit 6.5 – We are mobile app developers	NEW Unit 6.2 – We are project managers	NEW Unit 6.6 – We are marketers	NEW Unit 6.1 – We are app planners	NEW Unit 6.4 – We are interface designers	NEW Unit 6.3 – We are market researchers	

Impact

By the time our pupils leave they will:

- be competent 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
- have understanding of how technology works
- be able programme effectively and use digital media creatively