

Links to Curriculum Drivers

ExpreSsive Communicators, Health
Champions, Lifelong learners, World citizens
Open to PoSsibilities



Ridgeway Primary Academy

Computing skills progression



Threshold Concept	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To understand and implement algorithms	Understand that a programmable toy can be controlled by inputting a sequence of instructions.	Have a clear understanding of algorithms as sequences of instructions and how they are implemented as programmes on digital devices.	Increase their knowledge and understanding of Scratch by using sequence, selection and repetition	Have an understanding of the use of design and variables within an educational computer game using forms of input and output (such as sensors, switches, motors, lights and speakers).	Further develop an understanding of variables, sequences and repetitions within computer programming and how syntax is used to produce them.	Learn and understand some of the syntax of a text-based programming language.
	Use logical reasoning to predict how their programs will work.	Use logic and reasoning to predict what a simple program will do by describing what happens in computer games	Use logic and reasoning to predict the outcome of their scratch sequence before execution	Recognise the importance of user interface design, including consideration of input and output.	Become familiar with the tools and techniques of a vector graphics package (e.g. turtle graphics).	Understand common algorithms for sorting and searching.
	Develop and record sequences of instructions as an algorithm by programing a toy.	Create and convert their own simple algorithms to programs.	Write a program in Scratch using algorithms to create the animation in the	Develop an educational computer game using selection and repetition.	Design and create a computer program for a computer game, which uses	Understand how some key algorithms can be expressed as programs.
						Use commands to display text on screen, accept typed user input, store and retrieve data using variables and select

	Spot errors in their algorithms. Algorithm Programme Predict Instructions Right Left Forwards Backwards Bee-bot Create Mistake Application (App) Pattern	Spot and fix (debug) errors in their programs. Bug Debug Logic Sequence Identify Programme Destination Logical reasoning Scratch Convert Precise Command Loop Selection Sprite	form of a storyboard Correct mistakes in their animation programs. Debug programs that accomplish specific goals. Recognise a number of common types of bug in software Input Output Amend Storyboard Animation Decomposing Software Detect Error Repetition Strategies Problem solving	Design and make an on-screen prototype of a computer-controlled toy. Start to debug computer programs by decomposing them into smaller parts. Design, write and debug the control and monitoring program. Variable Interface design Code	sequence, selection, repetition and variables. Detect and correct errors in their computer game using iterative development techniques (making and testing a series of small changes) to improve their game. Develop an appreciation of the links between geometry and art. Be familiar with semaphore and Morse code.	from a list by planning a text-based adventure with multiple 'rooms' and user interaction. Thoroughly debug the program. Understand that some algorithms are more efficient than others for the same problem. Appreciate algorithmic approaches to problems in mathematics. Syntax User input User interaction Efficient
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					Interactive Iterative Encryption Script Simulation	
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To Recognise common uses of information technology beyond school.	Recognise common uses of information technology beyond school Information technology	Think critically about computer games and their use. Understand that email can be used to communicate. Develop skills in opening, composing and sending email Communicating Email	Develop understanding of how the internet, the web and search engines work. 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 Understand computer networks, including the internet; how they can provide	Understand some technical aspects of how the internet makes the web possible. Understand the conventions for collaborative online work, particularly in wikis. HTML Tags Hyperlink	Understand the need for private information to be encrypted. Encrypt and decrypt messages in simple ciphers Morse Code Cryptographer Semaphore Encrypted Decrypt Complex Passwords	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 Transmit Receive Communication protocols IP addresses Domain name system
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			multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. Video conferencing Computer networks Collaboration Netiquette Online safety Server			
To use digital devices	Develop collaboration skills. Discuss their work and think about how it could be improved.	Develop collaboration skills through working as part of a group. Consider the technical and artistic merits of photographs.		Develop an awareness of how their composition can enhance work in other media. Develop proofreading skills	Develop and refine their ideas and text collaboratively. Question the plausibility and quality of information. Develop their research skills to decide what information is appropriate. Understand some elements of how search	Showcase shared media content through a mapping layer.

	Use sound recording equipment to record sounds. Develop basic keyboard skills, through typing and formatting text. Develop basic mouse skills. Mouse Keyboard Typing Formatting Combining Copy Paste Laptops/computers/tablets Edit	Use a digital camera or camera app. Take digital photographs. Take, edit and enhance photographs. Gain skills in opening and listening to audio files on the computer. Manipulate	Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing. Shooting Framing review	Use one or more programs to edit music. Computer networks Platform	engines select and rank results. Develop some awareness of computer-generated art, in particular fractal-based landscapes. Operating system	Capture images, audio and video while on location. Understand the safe use of mobile technology, including GPS.
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To use digital content: Communicating through different forms of media	Select and use appropriate painting tools to create and change images on the computer. Create an illustration for a particular purpose. 2paint 2simple Illustration Appropriate Sound recording Audience Purpose Create Camera		Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length. Computer games Manipulate Framing Edit Narrative Perspective Narration Flip camera Select Use Combine		Become familiar with blogs as a medium and a genre of writing Critical Reflective Media Blogs Sharing content	Think critically about how video is used to promote a cause. Manage or contribute to large collaborative projects, facilitated using online tools. Write and review content.
To create digital content <i>(Use technology purposefully to create, organise, store, manipulate and retrieve digital content)</i> <i>(Use ... a variety of software (including internet services) ... to ... create ... content ... including ... presenting information)</i>	Use different features of a video camera. Use a video camera to capture moving images. Camera Capture Image Moving still Digital devices Technology Organise	Develop presentation skills through creating and delivering a short multimedia presentation.	Create their own original images. Edit video, including adding narration and editing clips by setting in/out points. Plan, design and deliver an interesting and engaging presentation.	Design and make an on-screen prototype of a computer-controlled toy. Code up a simple web page for a target audience with useful content using HTML tags and hyperlinks to	Create original artwork and sound for a game Create a sequence of blog posts on a theme developing	Storyboard an effective advert for a cause. Design and produce a high-quality print document. Work collaboratively to shoot suitable original footage and source additional content,

	Create Store Retrieve	Organise Store Manipulate Retrieve Technical Photographs Portfolio Review	Plan Evaluate Content	connect ideas and sources. Create and develop a musical composition, refining their ideas through reflection and discussion. Prototyping Computer control Sensors Switches Motors Systems Composition Refine Garage band	familiarity with a simple CAD (computer aided design) tool. 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. Vector-graphics Turtle-graphics Tools Criteria Computer generated Fractal based landscapes Plausibility Virtual 3D Computer aided design Architect Reverse engineer	acknowledging intellectual property rights. Work collaboratively to edit the assembled content to make an effective advert. Critically Promote Cause Suitable Intellectual property rights Audio Pulse code modulation Video Capture Showcase High quality
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To understand how to research Digitally	Use the web safely to find ideas for an illustration. Find and use pictures on the web. Web browser Internet Online Search engine	Develop research skills through searching for information on the internet. Collaboration Presentation	Search for and evaluate online images. WWW (World wide web)			Research a location online using a range of resources appropriately. Cache
To understand how to Collect and interpret online data		Collect data using tick charts or tally charts. Use simple charting software to produce pictograms and other basic charts. Record information on a digital map. Formatting Classify Composing Collecting Data Spreadsheet Tally charts Pictogram	Use the web to facilitate data collection. Understand some elements of survey design. Gain skills in using charts to analyse data. Gain skills in interpreting results.	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 Understand different measurement techniques for		

			Understand some ethical and legal aspects of online data collection. Collecting Analysing	weather, both analogue and digital. Analogue Data Automate Recording Chart Inconsistencies Measure Excel	Understand the work of architects, designers and engineers working in 3D Develop spatial awareness by exploring and experimenting with a 3D virtual environment.	
<u>Vocabulary</u>	<u>YEAR 1</u>	<u>YEAR 2</u>	<u>YEAR 3</u>	<u>YEAR 4</u>	<u>YEAR 5</u>	<u>YEAR 6</u>
<u>UNIT 1</u>	Algorithm, debug, instructions, predict, programming, robot treasure,	Algorithm, instructions, predict, problem, program, robot, Scratch, sprite	Algorithm, animation, input, output, program, script, storyboard	debug input, interface, output, program, prototype, repetition, variable,	Algorithm, debugging, g code, programming, sprites, storyboard	Python, repetition, variable, selection, print, procedure, syntax
<u>UNIT 2</u>	Algorithm, clip, edit, film, instructions, recipe, robot, video camera	Algorithm, predict, rules, Scratch, test	Algorithm, bugs, debug, instruction, program, script	Algorithm, debug input interactive output pitch prototype simulation	binary code, cipher, decrypt, encrypt, Morse code, password security, semaphore	Algorithm, flowchart, pseudocode, linear search random, search, binary search, selection sort, quicksort
<u>UNIT 3</u>	Character, eBook, edit, illustration, traditional tale	Camera, image, Picasa, pixel, portfolio, theme	Audio, close-up, editing, footage, panning, shooting,	Audio, composition, copyright, digital, instruments, pitch,	Geometric, landscape, op art, sprite,	Footage, rough cut, storyboard, advert, Creative Commons,

			video camera, zooming	sample, sequencing software	symmetry, tessellations	video camera, rushes of footage, final cut
<u>UNIT 4</u>	Algorithm, copyright, e-safety, mammal, permission, personal, private	Google, mind map, presentation, research, search, search engine	Vlogging, search engine, internet, presentation, narration, Creative Commons copyright, images, audio, screencast	Code, HTML, HTTP, (hyper text transfer protocol) hyperlink, tag, URL, web page	bias e-safety, Page Rank, revision, history, search engine, wiki	command prompt, internet, IP address, packet of data, the web, webserver, network, Domain Name, Service (DNS)
<u>UNIT 5</u>	audio book, copyright, microphone, recording, sound effects, talking book	Address, attachment, database, evidence, email, fact file, header, safety	Attachment, email, e-safety, spam, spoofed link video conference, virus	Edit, information, mind map, reliable, style, wiki, Wikipedia's, Five pillars	Audience, blog, blogroll, copyright, dashboard, hyperlinks, podcast	Geotagging, GPS, route, location, tracklog, smartphone, map, metadata
<u>UNIT 6</u>	Celebrate, copyright, edit, greeting, keyboard, save, type	Chart, classification key, data, database, photograph, tally chart, tick chart	Chart, data, graph, opinion, questions, rating scale, research, survey	Chart, data-logging, forecast, graph, measurement, prediction, spreadsheet, temperature	3D, animation, gallery, navigation, screencast, sculpture, virtual	Desktop publishing, (DTP), magazine, yearbook, collaboration, design, images, typeface, layout