Reffley Computing Curriculum

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Overview

Reffley Academy Computing Curriculum

At Reffley Academy children:

- Have a varied prior experience of computing.
- Some pupils struggle with basic computer skills such as using a mouse and keyboard.
- Generally, pupils have access to gaming technology including a range of handheld and console devices.
- Typically, pupils are used to using touch screen devices.

Therefore, the Computing curriculum at Reffley Academy has been planned as follows:

- Builds skills and knowledge over time for the key computing strands.
- Unit plans have been created to ensure coverage of the national curriculum. Skills and knowledge are taught progressively across the school.
- Technical vocabulary is explicitly taught and modelled by teachers. Knowledge organisers have been created with vocabulary

sections for children to refer to.

Intent, Implementation and Impact

Intent	Implementation	Impact
The intention of the computing curriculum is to ensure all children: • Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. • Are able to analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems. • Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems • Are responsible, competent, confident and creative users of information and communication technology. • Digitally literate for future • Natural and artificial systems • Knowing the dangers of a digital world and understanding how to protect themselves.	**Implementation:** • Topic overviews and timings are planned through the use of Rising stars switched on computing. This ensures a broad and balanced curriculum is taught across all areas of computing at an age-appropriate level. • Computing lessons will follow the structure of Switched on computing and will provide opportunities in lessons to focus on the six key strands in computing. • Ipads, netbooks and Beebots are available to be used to support learning in addition to computing lessons • E-safety is taught regularly as part of units • Computing is taught in all year groups. • Assessment takes place at the end of each unit. • Knowledge organizers are sent home for each unit. • Evidence of computing learning is recorded in children's topic books.	**Know more** • Switched on computing ensures that all children are taught age related content which builds on previous learning. • Working walls showcase worked examples so that children can refer to them when undertaking their independent work. • Vocabulary is explicitly taught that is relevant to the area of study. Children are encouraged to use the correct vocabulary during lessons and this is modelled by the teacher. • End of term assessments are completed to gain insight into what the children have learnt. • Switched on computing covers all the strands of the computing curriculum. • Children are exposed to a range of computing devices that are relevant to today's digital world. **Do more** • Lessons are planned which build upon skills previously learnt. • Children are given time to apply skills. • Children use the skills they have learnt independently. • Children use connections to do more. **Remember more** • At the beginning of a unit previous earning is recapped to enable children to make links. • Exposure to a range of technologies. • Children can use vocabulary to discuss learning. • Children can explain how to keep themselves safe.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	The EYFS prime and specific areas are enhanced by the use of computing skills. When creating a curriculum that enables children to achieve the characteristics of effective learning (playing and exploring, active learning, creating and thinking critically) the use of computing and the teaching of skills are paramount to placing this in the modern, current world. Children use Apps to widen their learning and make it relevant and so that computing skills are taught. Children learn about recording their learning (photographs, sequencing and videos) and how to make their learning creative and purposeful. Children begin to learn about programming and mapping by using the Beebots. Google is used and explicitly explained so that children learn about how to find out more (this runs side by side with online safety).					
Year 1	Computer skills We are treasure hunters. Solving problems using programmable toys Computer science / Coding	We are TV chefs. Filming the steps of a recipe Computer science/ Computational thinking	We are digital artists. Creating work inspired by great artists. Information technology : creativity	We are publishers. Creating a multimedia ebook about our achievements. Digital Literacy: Online Safety	We are Rhythmic Creating sound patterns in Scratch Junior and Garage band Information technology : Media	We are detectives. Using data to solve clues Information technology: data
Year 2	We are astronauts. Programming on screen in Scratch Junior Computer science - coding	We are game testers. Working out the rules for the games. Computer science: computational thinking	We are photographers. Taking, selecting and editing digital images Information technology: media	We are researchers. Researching a topic Digital Literacy Online Safety	We are animators Creating a stop – motion animation Information technology: Media	We are zoologists. Collecting data about bugs Information technology: Data
Year 3	We are programmers. Programming an animation Computer Science: Coding	We are bug fixers. Finding and correcting bugs Computer science : computational thinking.	We are presenters. Videoing a presentation against a green screen. Information technology: Media	We are who we are. Creating presentations about ourselves. Digital Literacy Online safety.	We are co-authors. Producing a wiki Information technology : Media	We are opinion pollsters. Collecting and analysing data. Information technology: Data

Year 4	We are software developers. Developing a simple educational game. Computer Science: Coding	We are makers. Coding for micro: bit Computer science : coding	We are musicians. Creating a piece of music in garage band. Information technology: Media	We are bloggers. Sharing experiences and opinions. Digital Literacy: online safety.	We are artists. Fusing Geometry and art. Computer science: coding	We are meteorologists. Recording and presenting the weather Information technologu: Data
Year 5	We are game developers. Developing and interactive game. Computer science: Coding	We are cryptographers. Cracking codes Computer science: Computational thinking.	We are architects. Creating a virtual space Information technology: Media	We are web developers. Making sense of the internet and building a website. Digital Literacy: Online safety	We are adventure gamers. Creating an interactive adventure using presentation software. Information technology: Media	We are VR designers. Experimenting with virtual and augmented reality. Information technology: Media.
Year 6	We are toy makers. Coding and physical computing. Computer science: coding	We are computational thinkers. Mastering algorithms for searching, sorting maths. Computer science: computational thinking.	We are publishers. Creating a yearbook or magazine. Computer science: Computational thinking.	We are connected. Developing skills for social media. Digital literacy: online safety	We are advertisers. Creating a short television advert. Information technology: Media	We are AI developers. Learning about artificial intelligence and machine learning. Computer science: coding.

Progression of Skills

<table>
<tr><th></th><th colspan="2">Year 1</th><th colspan="2">Year 2</th><th colspan="2">Year 3</th><th colspan="2">Year 4</th><th colspan="2">Year 5</th><th colspan="2">Year 6</th></tr>
<tr><td>National Curriculum objectives</td><td colspan="4">Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
Create and debug simple programs
Use logical reasoning to predict the behaviour of simple programs
Use technology purposefully to create, organise, store, manipulate and retrieve digital content
Recognise common uses of information technology beyond school
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</td><td colspan="8">Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</td></tr>
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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
Problem solving	understand algorithms as sequences of instructions in everyday contexts. take real-world problems and then plan a sequence of steps to solve these. program floor turtles using sequences of instructions to implement an algorithm. can create a Blue-Bot program using a number of steps in order before pressing the Go button.	can understand algorithms as sequences of instructions or sets of rules in everyday contexts. can recognize that common sequences of instructions or sets of rules can be thought of as algorithms. can program on screen using sequences of instructions to implement an algorithm. can create programs as sequences of instructions when programming on screen.	can explore simulations of physical systems on screen. can experiment with some on-screen simulations of physical systems, perhaps linked to topics from other curriculum areas, can discuss what they have learned from using the simulation. The pupil can plan a project. Working with the teacher and, perhaps, other pupils, the pupil can develop an outline plan for a project in computing, involving multiple steps and resources.	can work with others to plan a project. Given a particular project, the pupil can work as part of a team to plan how to accomplish their goal, breaking the project down into a set of tasks.	can design, write and debug a program using a block language based on their own ideas. can design a program of their own and write this in a block-based language such as Scratch. can test and debug their code, explain what bugs they found and how they fixed them. can design, write and debug a program using a block language based on their own ideas. can design a program of their own and write this in a block-based language such as Scratch. can test and debug their code, explain what bugs they found and how they fixed them. can plan a solution to a problem using decomposition. can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified.	can design, write and debug a program using a second programming language based on their own ideas. can design a program of their own and write this in a programming language other than can test and debug their code, explain what bugs they found and how they fixed these. can design, write and debug their own computer control application. can solve problems using decomposition, tackling each part separately? can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified. they can then use their plan to solve the original problem.	1.1, 1.2, 2.1, 2.2, 2.3, 3.1, 3.2,4.1, 4.2, 4.6, 5.1, 5.3, 6.1, 6.2
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
	The pupil can give a sequence of instructions to a floor turtle. The pupil can create a Blue-Bot program using a sequence of instructions before running it using the Go button. The	The pupil can create a simple program on screen, correcting any errors. The pupil can create a simple program on screen (e.g. using ScratchJr) with a particular goal or	The pupil can use sequence in programs. In on-screen programming, the pupil's program should include a sequence of commands or blocks in an appropriate order. A typical program could be a simple scripted animation, e.g. telling a	The pupil can use sequence and repetition in programs. The pupil's program, typically written in Scratch, or similar, should include sequences of commands or blocks	The pupil can use sequence, selection and repetition in programs. The pupil's program, typically written in Scratch, or similar, should include sequences of commands or blocks, some repetition and selection. Repetition might include exit conditions (e.g. repeat...until...).	The pupil can use sequence, selection, repetition, variables and procedures in programs. The pupil's program should include sequences of commands or blocks, repetition, selection, variables and user-defined procedures, functions or	1.1, 2.1, 2.2, 3.1, 3.2, 4.1, 4.2, 4.3, 5.1, 6.1, 6.2

Programming	length of the pupil's programs might be expected to increase over the course of the year The pupil can give explanations for what they think a program will do. The pupil can explain to the teacher, and to peers, what they think a program will do. This could be a program they or their peers have written, or it could be a familiar piece of software (including computer games). The pupil could use an audio recorder or video camera to capture their explanations.	purpose in mind (e.g. moving a sprite from one place to another). The pupil can debug any errors in their own code.	joke, a story or explaining an idea taken from elsewhere on the curriculum. The pupil's program might include multiple sprites; instructions could include movement, on-screen text, sound and/or costume changes. The pupil can write a program to produce output on screen. The pupil can create a program that produces output on screen, such as moving sprites or displayed text, e.g. a simple animation program.	and some repetition. Repetition would typically be for a fixed number of times, but might also include exit conditions (e.g. repeat...until...). Programs might include simple music or a simple game. The pupil can write a program that accepts keyboard input and produces on-screen output. In Scratch (or similar), the pupil can write a program that displays a question, accepts typed input and responds in an appropriate way to what is typed. This might be used as the basis for a dialogue program or a simple maths game.	Selection would normally be of an if...then or if...then...else type. At this level, expect the pupil to be able to combine repetition with selection. Programs might include a computer game. The pupil can write a program that accepts keyboard and mouse input and produces output on screen and through speakers. In Scratch (or similar), the pupil can create a computer game using the keyboard or mouse for input and the screen and speakers for output.	custom blocks. Repetition might include exit conditions (e.g. repeat...until...) and perhaps a counter-variable for iteration. Selection would normally be of an if...then or if...then...else type. At this level, expect the pupil to be able to combine repetition with selection and variables. Procedures or custom blocks need not include passing parameters, although they might. The pupil can use principles of good user-interface design, including accessibility, when developing programs. In developing their program, the pupil should take account of the needs of their intended users and be able to explain how these have influenced design and development decisions. The pupil should test their program with intended users, making changes on the basis of the feedback they receive. The pupil should consider design for accessibility.	
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
	The pupil can give explanations for what they think a program will do. The pupil can explain to the teacher, and to peers, what they think a program will do. This could be a program they or their peers have	The pupil can give logical explanations for what they think a program will do. The pupil can give logical explanations of what a program will do under given circumstances, including some attempt at explaining why it	The pupil can explain a simple, sequence-based algorithm in their own words. The pupil can give an explanation for a simple algorithm based on a sequence of instructions. The algorithm could be one of their own, or a simple one with which they have been provided.	The pupil can explain an algorithm using sequence and repetition in their own words. Given an algorithm using both sequence and repetition, the pupil can give a coherent, logically reasoned explanation of what it does and	The pupil can explain a rule-based algorithm in their own words. When provided with a rule-based algorithm (e.g. for a computer game), the pupil should be able to explain what it does and how it works, in their own words. The pupil can use logical reasoning to detect errors in algorithms. When given an algorithm for a	The pupil can give clear and precise logical explanations of a number of algorithms. Given an algorithm, the pupil can describe what it does and, using logical reasoning, give precise explanations of how it works. Algorithms could be linked to programming projects, but might include a key algorithm such as binary	1.1, 2.1, 2.2, 3.1, 3.2, 4.1, 5.1, 5.2, 6.1, 6.2

Logical thinking	written, or it could be a familiar piece of software (including computer games). The pupil could use an audio recorder or video camera to capture their explanations.	does what it does. The program could be one they have written or it could be a computer game or a familiar piece of software. The pupil could use an audio recorder or a video camera to record their explanations.	The algorithms could be recorded graphically, e.g. as a storyboard. The pupil can use logical reasoning to detect errors in programs. The pupil can give well-thought-through reasons for errors they find in programs. Typically, the pupil can find errors by reasoning logically about the program code, but they might also be able to use logical reasoning to identify errors in programs when they are executed. The programs do not have to be written originally by the pupil.	how it works. Repetition is likely to be 'forever' or for a set number of times, although end conditions (e.g. repeat...until...) could be used. The pupil can use logical reasoning to detect and correct errors in programs. The pupil can give well-thought-through reasons for errors they find in programs and explain how they have fixed these. The pupil can find and correct errors by reasoning logically about the program code; they might also be able to use logical reasoning to identify errors in programs when executed and confirm that they have fixed these by testing the new version of their program. The programs do not have to be written originally by the pupil.	particular purpose, e.g. a rule-based algorithm for a computer game or a sequence of steps to draw a geometric pattern, the pupil can use logical reasoning to identify possible errors in the algorithm, explaining why they believe the algorithm is incorrect	search. The pupil can use logical reasoning to detect and correct errors in algorithms (and programs). When given an algorithm for a particular purpose, e.g. a rule-based algorithm for a smartphone app, the pupil can use logical reasoning to identify possible errors in the algorithm, explaining why they believe the algorithm is incorrect. The pupil can use logical reasoning to suggest possible corrections to the algorithm, explaining why these would correct the bug they identified.	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
Wider understanding			The pupil can understand that computer networks transmit information in a digital (binary) format. The pupil can explain that any information has to be converted to numbers before it can travel through computer networks. The pupil should understand that this conversion happens according to an agreed system or code. The pupil can understand that email and videoconferencing are made possible through the Internet. The pupil should know that email messages are sent and received through servers connected to the Internet. The pupil should know that other systems also work through the Internet, but these services may be direct, peer-to-peer connections rather than via servers.	The pupil can understand that the Internet transmits information as packets of data. When working online, the pupil can explain that the information they send and receive is automatically broken down into packets of data, and that these sometimes take different routes across the Internet. The pupil can understand how the Internet makes the web possible. The pupil can give an explanation of how requests for web pages, and the HTML for those pages, are transmitted via the Internet.	The pupil can explain how Internet routing adapts to faults in the network. The pupil can give a coherent explanation of how data packets are routed from one computer to another on a separate network, which is also connected to the Internet, and how this routing would change if the network were to develop a fault. The pupil can show an understanding of how content management systems are used on the web. The pupil can explain some differences between static web pages written as simple HTML files and those generated from a database of content elements by content management systems such as WordPress.	The pupil can understand how mobile phone or other networks operate. The pupil can give an explanation of how networks operate: they should know that information is transmitted digitally, and have some understanding of the network topology involved. The pupil can understand how domain names are converted into IP addresses on the Internet. The pupil can give some explanation of how a domain name is converted into an IP address using the distributed domain name system (DNS) using something similar to a set of phone books. The pupil should show an awareness of the looked-up addresses (DNS records) being copied (cached), and that more local records are used in preference to more authoritative records in most circumstances.	3.5,3.6, 4.4, 5.2, 5.4,

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
Creating content	The pupil can use digital technology to store and retrieve content. The pupil can use a range of digital technologies to store and access digital content. These might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders. Projects might include videoing one another cooking, developing an eBook or an audiobook, creating a greetings card. The pupil can create original content using digital technology. The pupil can create their own original digital content using a range of technologies. These might include laptop computers, tablets,	The pupil can store, organise and retrieve content on digital devices for a given purpose. With a given purpose, the pupil can use a range of digital technologies to retrieve, organise and store digital content. Technologies will typically include laptop computers, tablets and smartphones with access to the Internet, but the pupil might also be expected to use digital cameras, video cameras and audio recorders (or the equivalent apps on a tablet or smartphone). Projects might include digital photography, searching for images online and creating image-based presentation slides. The pupil can create	The pupil can use a range of programs on a computer. The pupil can use a range of software on laptop or tablet computers with some degree of independence. Software might include video editing, diagnostic tools, email clients, videoconferencing (with the teacher or another adult), survey design software, spreadsheets and presentation software. The pupil can design and create content on a computer. The pupil can plan and execute a project in which they use software on a laptop or tablet to create digital content with some degree of independence. For example, they could plan and shoot a video, plan and create a presentation on a given topic or plan and then create an online survey. The pupil can collect and present information.	The pupil can use and combine a range of programs on a computer. The pupil can use multiple programs on laptop or tablet computers to achieve particular goals. For example, they might record audio and then use this as samples in a composition; create HTML content in a text editor and preview it in a browser; analyse data in a spreadsheet and then create a presentation to show the results of their analysis. The pupil can design and create content on a computer in response to a given goal. With a given goal, the pupil can plan and execute a project in which they use software	The pupil can use and combine a range of programs on multiple devices. The pupil can use multiple digital devices (such as tablets and laptops or digital cameras and laptops) to achieve particular goals. The devices might include web servers, allowing them to use cloud-based applications. For example, they might use local media in conjunction with a cloud-based programming platform, such as Scratch; digital cameras and video cameras to capture content to use on an externally hosted website or blog; a digital camera to take photos they could import into 3D design software on a laptop. The pupil can use filters to make more effective use of a standard search engine. The pupil can use a common search engine (such as Google with safe search mode locked in place) effectively, to search for particular information on the web, such as answers to questions they identify in a research project. They should use built-in search tools to filter their results, such as by time, location or reading level. The pupil can understand that search engines use a cached copy of	The pupil can select, use and combine a range of programs on multiple devices. The pupil can choose for themselves from a range of available programs on laptops, tablets or cloud-based services to achieve particular goals. For example, they might choose which image editors and presentation software to use when making a presentation; which image and audio editors to use when creating media content for an app; which DTP, video editor and website tools to use when developing marking materials for an app. The pupil can design and create systems in response to a given goal. The pupil can plan, design and implement a system with multiple, interrelated components with a given goal in mind. The pupil can analyse and evaluate data.	1.2, 1.3, 14, 1.5, 1.6, 2.3, 2.4, 2.5, 2.6, 3.3, 3.4, 3.6, 4.3, 4.4, 5.3, 5.4, 6.3

	smartphones, digital cameras, video cameras and audio recorders. Projects might include videoing one another cooking, developing an eBook or an audiobook, creating a greetings card. Look for some indication of the pupil's creativity in this work.	and edit original content for a given purpose using digital technology. The pupil can create and edit their own original digital content using a range of technologies. Content-creation technology might include laptop computers, tablets, smartphones with network connections, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the pupil's creativity in this work and evidence that they have edited content.	The pupil can use computers to collect information and present this to an audience. For example, they could shoot and then show a video or conduct an online survey and present the results. They should be able to do this with a degree of independence.	on a laptop or tablet to create digital content with some degree of independence. For example, they could plan and compose original music using sequencing software; plan and create a web page; plan how they could contribute to a shared wiki and then do so; plan and create a presentation about the weather. They should evaluate how effectively they have met the requirements of the original goal.	the crawled web to select and rank results. The pupil can explain how a search engine creates an index from a cached copy of the web and uses this to select and rank results. The pupil might also show an awareness of the Page Rank algorithm in which results are ranked according to the number and quality of in-bound links.	The pupil can evaluate the quality of numerical data, deciding the extent to which it is affected by systematic or random errors. They should analyse their data, perhaps producing summary statistics, looking for relationships, trends and exceptions. The pupil can make use of a range of search engines appropriate to finding information that is required. The pupil can show that they can use effectively a range of different search technologies, including alternatives to Google (such as Bing or Yahoo) and site-specific search engines (such as those for the App Store or Google Play). E.g. They could demonstrate how they would use a range of search engines when researching available smartphone apps for a particular purpose. The pupil can appreciate that search engines rank pages based on the number and quality of in-bound links. The pupil can demonstrate some awareness of the Page Rank algorithm, explaining that the quality of a page is determined largely on the basis of the number and quality of links pointing to that page in the engine's cached copy of the web, and that quality is itself determined recursively through Page Rank.	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
Searching			The pupil can search for information within a single site. The pupil can use browser-specific tools (e.g. the Find command) and site-specific tools (such as the search tools for Wikipedia or YouTube) to locate particular information on a web page or within a website. The pupil can understand that search engines select pages according to keywords found in the content. When using search engines, the pupil should demonstrate their understanding that the pages shown include the keywords they have specified. The pupil can use this knowledge by thinking of good keywords appropriate for what they are searching.	The pupil can use a standard search engine to find information. The pupil can use a common search engine (such as Google with safe search mode locked in place) effectively, to search for particular information on the web, such as answers to questions they identify in a research project. The pupil can understand that search engines rank pages according to relevance. The pupil can demonstrate their understanding that search engine results are ranked according to relevance, and that normally the top results on the first page are likely to be those most relevant to their query. If the pupil is unable to find good results on the first page, expect	The pupil can use filters to make more effective use of a standard search engine. The pupil can use a common search engine (such as Google with safe search mode locked in place) effectively, to search for particular information on the web, such as answers to questions they identify in a research project. They should use built-in search tools to filter their results, such as by time, location or reading level. The pupil can understand that search engines use a cached copy of the crawled web to select and rank results. The pupil can explain how a search engine creates an index from a cached copy of the web and uses this to select and rank results. The pupil might also show an awareness of the Page Rank algorithm in which results are ranked according to the number and quality of in-bound links.	The pupil can make use of a range of search engines appropriate to finding information that is required. The pupil can show that they can use effectively a range of different search technologies, including alternatives to Google (such as Bing or Yahoo) and site-specific search engines (such as those for the App Store or Google Play). E.g. They could demonstrate how they would use a range of search engines when researching available smartphone apps for a particular purpose. The pupil can appreciate that search engines rank pages based on the number and quality of in-bound links. The pupil can demonstrate some awareness of the Page Rank algorithm, explaining that the quality of a page is determined largely on the basis of the number and quality of links pointing to that page in the engine's cached copy of the web, and that quality is itself determined recursively through Page Rank.	3.5, 4.6, 5.3, 6.3, 6.4

				them to reconsider their keywords rather than looking at further pages of results.			

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
E-safety	The pupil can keep themselves safe while using digital technology. The pupil can understand that they need to keep safe when using digital technology. For example, they should know to use filtered Safe Search when looking for images on the web and that they should close the lid of a laptop (or turn over a tablet) and alert an adult if they come across unsuitable content. The pupil can understand that information on the Internet can be seen by others. The pupil should be aware that information stored on the web or transmitted via the Internet is available to other people. E.g. They should know that the images	The pupil can keep safe and show respect to others while using digital technology. The pupil should know that they need to keep themselves safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the web and that they should close the lid of a laptop (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission and acknowledgement. They should observe age	The pupil can use digital technology safely and show respect for others when working online. The pupil should know that they need to keep themselves safe when using digital technology. For example, they should show respect for others when filming and should not normally post videos online. If responding to online surveys, they should do so anonymously, thinking carefully about information they give out. The pupil can recognise unacceptable behaviour when using digital technology. The pupil can identify what would be unacceptable or inappropriate behaviour when using digital technology in a range of contexts. For example, they should know what would be unacceptable when using online communities, such as the Scratch website, or when	The pupil can demonstrate that they can act responsibly when using computers. The pupil can act responsibly when using computers. For example, they should act responsibly when developing computer games or prototype products. They should behave responsibly when using sampled music or creating a composition. They should show responsibility when creating or remixing online content, including observing copyright and any terms and conditions. They should contribute positively to a shared wiki. The pupil can understand the difference between acceptable and unacceptable behaviours when using digital	The pupil can demonstrate that they can act responsibly when using the Internet. The pupil can act responsibly when using the Internet. For example, they should act responsibly when participating in an online community, such as the Scratch community, if permitted to do so. They should demonstrate that they understand the importance of encrypted (HTTPS) connections when browsing the web and of using strong passwords to protect their identity online. They should act responsibly when creating, editing or commenting on web pages or blog posts. The pupil can discuss the consequences of particular behaviours when using digital technology. The pupil can discuss the likely or possible consequences of particular behaviours when using digital technology in a range of contexts. Contexts could include the Scratch website, or other online communities; using cryptography and passwords; creating websites or writing blog posts.	The pupil can show that they can think through the consequences of their actions when using digital technology. The pupil can discuss likely and potential consequences of their actions when using digital technology in a range of contexts. Contexts might include developing smartphone apps; using online project management tools; collecting information for market research; posting original content online. The pupil can identify principles underpinning acceptable use of digital technologies. The pupil can identify some principles underpinning acceptable behaviour when using technologies in a range of contexts. Contexts could include smartphone or tablet use; the use of online project management tools; online surveys and recording of interviews; creating and sharing digital content. Know a range of ways to report concerns and	1.2,1.3,1.4, 1.6, 2.2, 2.3, 2.4, 2.6, 3.3, 3.4,3.5,3.6, 4.3, 4.4, 4.6, 5.2, 5.3, 5.4, 6.3, 6.4, 6.5

	they find online can be found by others too, and that the queries they type in can be seen by those who run the search engine they use and the school's network. The pupil can understand what to do if they see disturbing content online at home or at school. The pupil should know to close their laptop lid or turn their tablet over if they find content, such as inappropriate images, which might disturb them or other pupils. They should know to tell their teacher or their parents/carers if this happens	restrictions on computer games. The pupil can understand that they should not share personal information online. The pupil should understand that personal information should be kept private: it should not be posted online to a public audience and should only be shared privately with those who they (or their parents) would trust. E.g. The pupil should recognise that photos they take in school should not normally be posted to the open web. They should know that photos taken with smartphones often contain hidden information about where the photo was taken. The pupil can understand that they should not share personal information online. The pupil should understand that personal information should be kept private: it should not be posted online to a public audience and	shooting or publishing video. They should know what would be unacceptable use of the Command prompt, email or online survey tools. The pupil can decide whether a web page is relevant for a given purpose or question. The pupil can form a judgement about whether a web page is appropriate for finding out the answer to a question they have or for a given purpose. The pupil can use email and videoconferencing in class.	technology. The pupil can discuss the difference between acceptable and unacceptable behaviours when using digital technology in a range of contexts. Contexts could include the Scratch website, or other online communities; the use of others' original content, such as music samples or web pages; wikis, including Wikipedia. Know who to talk to about concerns and inappropriate behaviour at home or in school. Pupils should know to report inappropriate behaviour when using technology in school to their teacher, the network manager or another trusted adult, and that they can discuss any concerns they have with their teacher or other trusted adults in school. They should also know that any concerns over, or inappropriate behaviour with, digital technology at home can be discussed with their parents, with you or with another trusted adult. The pupil can decide	Know how to report concerns and inappropriate behaviour in a range of contexts. Pupils should know how to report inappropriate behaviour when using technology in school: preferably this will be to their teacher, the network manager or another trusted adult. They should know how to report any concerns over inappropriate behaviour with digital technology at home. Preferably this would be through discussion with their parents, with you or with another trusted adult. Pupils should also know how to report inappropriate behaviour to those running websites which they regularly use, and to Childline, CEOP or to the police. The pupil can decide whether digital content is reliable and unbiased. The pupil can discuss whether particular content (such as a web page, other pupils' pages or blog posts) is reliable and whether it has been written from a neutral point of view. They should be able to spot some examples of bias in digital content. The pupil can work collaboratively with classmates on a class website or blog. The pupil can work productively and positively with others when developing a shared website or contributing to a class blog.	inappropriate behaviour in a variety of contexts. Pupils should know how to report inappropriate behaviour when using technology in school: preferably this will be to their teacher, the network manager or another trusted adult. They should know how to report any concerns over, or inappropriate behaviour with, digital technology at home. Preferably this would be through discussion with their parents, with you or with another trusted adult. Pupils should also know how to report inappropriate behaviour to those running websites which they regularly use, and to Childline, CEOP or the police. Pupils should know that illegal content or activities can be reported to CEOP or the police. The pupil can form an opinion about the effectiveness of digital content. Taking into account the intended audience and purpose of the content, the pupil can form a judgement as to, and provide reasons for, the extent to which they consider digital content to be effective. The content might be media resources or marketing materials. The pupil can use online tools to plan and carry out a collaborative project.	

		should only be shared privately with those who they (or their parents) would trust. E.g. The pupil should recognise that photos they take in school should not normally be posted to the open web. They should know that photos taken with smartphones often contain hidden information about where the photo was taken. The pupil can understand what to do if they have concerns about content or contact online. The pupil should know to close their laptop lid or turn their tablet over if they find content, such as inappropriate images, which might disturb them or other pupils; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents/carers if this happens, and be aware that they could talk to another trusted adult or to Childline		whether digital content is relevant for a given purpose or question. The pupil can form a judgement about whether a web page, such as a Wikipedia article, or other digital content is appropriate for finding out the answer to a question they have or for a given purpose. The pupil can work collaboratively with classmates on a shared wiki. The pupil can work collaboratively with their peers on a shared project, such as a class wiki, making useful contributions and providing feedback to others.		The pupil can make use of an online tool to plan and carry out a collaborative project.	

		about this.					

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
Using IT beyond school	The pupil can show an awareness of how IT is used for communication beyond school. The pupil can mention some of the ways in which IT is used to communicate beyond school. E.g. They might know that some people use social media such as Facebook, email, video calls or online greetings to say happy birthday to their friends.	The pupil can show an awareness of how IT is used for a range of purposes beyond school. The pupil can name a number of purposes for which IT is used beyond school. The pupil might know that adults can share work and discuss ideas in online communities; that photos can be taken, edited and shared easily using digital technology; that the web is made up of information shared by people and organisations; that people use email for a range of purposes and in a variety of contexts; that scientists use computers when collecting and analysing data.					1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6

Vocabulary Progression

Year 1	• Algorithm • Bug • Debug Robot	• Algorithm • Audio • Edit • Narration Frame	• Zoom • Undo • Transform • Layer • Effect	• Audio Clip • Art • eBook • Filter • Font • Multimedia	• Audio • Message • Microphone • Repetition • Speaker • Track • Virtual	• Database • Filter • Sort • Table • Field
Year 2	• Algorithm • Bug • Debug • Input • Output Code	• Algorithm • Input • Output • Remix • Repetition Sprite	• Camera roll • Adjustment • Crop • Filter • iCloud Pixel	• Bing • Google • Mind Map • Safe Search • Search engine • Wikipedia	• Animation • Background • Flipbook animation • Frame Prop • Sound track • Stop motion	• Data Database • Branching database • Tally charts • Binary • Classification key
Year 3	• Algorithm • Bug • Debug • Input • Output • Code • Repetition • Sequence	• Algorithm • Bug • Debug • Input • Output • Code • Repetition • Sequence	• Camera roll • Green screen • 'Ken Burns' • Pixel • Resolution • Rushes • Search engine	• Comments • Data centre Outline • Personal information • Privacy	• Algorithm • Debug • Five Pillars • Hyperlinks • Wikipedia • Wiki	• Data • Survey • Personal information • Data protection • Analyse • Data centre • Anonymous
Year 4	• Algorithm • Repetition • Sequence • Input • Output • Repeat Loop Variable	• LED • Runtime • Simulator • Source code Variable	• Live loops • MIDI • Sample • Piano Roll • Touch Instrument Tracks	• Blog • Bloggers • Creative commons Hyperlink • Uniform Resource Locator (URL) • Web server	• Bitmap • Pixel • Tessellation • Transform • Turtle	• Data • Analogue • Digital • Filter (database) Input • Interface • Sensor
Year 5	• Algorithm • Bug • Debug	• Cipher • Codes • Cryptanalysis	• Computer-aided design (CAD)	• Hypertext mark-up	• Hyperlink • MP3 • Safe search	• Accelerometer • Augmented reality (AR)

	• Code • Iterative • Development • Logical reasoning • Program	• Cryptography • Decrypt • Encode • Encrypt • Morse Code	• Creative Commons • Photorealistic • Indistinguishable • Render	language (HTML) • Hypertext transfer protocol (HTTP) • Internet • Internet protocol addresses (IP) • Protocol • Web browser • Web server • World Wide Web	• Non-linear game • Interlinked	• Global positioning system (GPS) • Virtual reality (VR) • Stereographic • Google • Cardboard
Year 6	• Accelorometer • Bluetooth • Decomposition • Edge • Connector • Embedded System • Micro;bit • Microprocessor • Simulator	• Abstraction • Binary search • Decomposition • Divide and conquer • Graph Linear search • Quicksort • Selection sort	• eBook • ePub • Folder • Portable document format (PDF) • Desktop publishing (DTP)	• Fake news • Neutral point of view • Online bullying (cyberbullying) • Plausible • Reliable • Social media Source	• Storyboard • Export • Final Cut • Rough Cut • Rushes	• Artificial Intelligence • Classifier • Decision Tree • Image recognition • Neural • Network • Node