



PROGRESSION OF SKILLS & KNOWLEDGE MAP

ST JOHN FISHER RC PRIMARY SCHOOL



STRAND	SKILLS	COMPUTING					
		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
COMPUTER SCIENCE	Problem solving	<p>Understand algorithms as sequences of instructions in everyday contexts.</p> <p>Take real-world problems and then plan a sequence of steps to solve these.</p> <p>Program floor turtles (Bee-Bots) using sequences of instructions.</p>	<p>Understand algorithms as sequences of instructions or sets of rules in everyday contexts.</p> <p>Program on screen using sequences of instructions to implement an algorithm.</p>	<p>Design and write a program (including movement and dialogue or sound) using a block language, without user interaction.</p> <p>Explore simulations of physical systems on screen.</p> <p>Plan a project (working with the teacher).</p>	<p>Design and write a program (including simple interaction) using a block language to a given brief.</p> <p>Write a program in which the user has to provide input, e.g. an answer to a question on screen.</p> <p>Develop a simulation of a simple physical system on screen.</p> <p>Plan a project (working with peers)</p>	<p>Design, write and debug a program using a block language based on pupil's own ideas.</p> <p>Test and debug - explain which bugs pupil found and how they fixed these.</p> <p>Experiment with computer control applications.</p> <p>Plan a solution to a problem using decomposition.</p>	<p>Design, write and debug a program using a second programming language based on their own ideas.</p> <p>Test and debug - explain which bugs pupil found and how they fixed these.</p> <p>Design, write and debug their own computer control application.</p> <p>Solve complex problems using decomposition.</p>
	Programming	<p>Give a sequence of instructions to a floor turtle.</p>	<p>Create a simple program on screen, correcting any errors.</p> <p>Debug any errors in pupil's own code.</p>	<p>Use sequence (of commands or blocks in an appropriate order) in programs.</p> <p>Write a program to produce output on screen.</p>	<p>Use sequence and repetition in programs - include sequences of commands or blocks and some repetition.</p> <p>Write a program that accepts keyboard input and produces on-screen output.</p>	<p>Use sequence, selection and repetition in programs.</p> <p>Write a program that accepts keyboard and mouse input and produces output on screen and through speakers.</p>	<p>Use sequence, selection, repetition and variables in programs.</p> <p>Write a program that accepts inputs other than keyboard and mouse and produces outputs other than screen or speakers.</p>
	Logical Thinking	<p>Explain what pupil thinks a program will do.</p>	<p>Give logical explanations for what pupil thinks a program will do.</p>	<p>Explain a simple, sequence-based algorithm in pupil's own words.</p> <p>Use logical reasoning to detect errors in programs.</p>	<p>Explain an algorithm using sequence and repetition in their own words.</p> <p>Use logical reasoning to detect and correct errors in programs.</p>	<p>Explain a rule-based algorithm in pupil's own words.</p> <p>Use logical reasoning to detect errors in algorithms.</p>	<p>Give clear and precise logical explanations of a number of algorithms.</p> <p>Use logical reasoning to detect and correct errors in algorithms (and programs).</p>

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INFORMATION TECHNOLOGY	Creating Content	Use digital technology to store and retrieve content. Create original content using digital technology.	Store, organise and retrieve content on digital devices for a given purpose. Create and edit original content for a given purpose using digital technology.	Use a range of programs (software) on a computer. Design and create content on a computer. Collect and present information.	Use and combine a range of programs on a computer. Design and create content on a computer in response to a given goal. Collect and present (numerical) data.	Use and combine a range of programs on multiple devices. Design and create programs on a computer in response to a given goal. Design and create programs on a computer in response to a given goal.	Select, use and combine a range of programs on multiple devices. Design and create systems in response to a given goal. Analyse and evaluate data.
	Searching			Search for information within a single site. Understand that search engines select pages according to keywords found in the content.	Use a standard search engine to find information. Understand that search engines rank pages according to relevance.	Use filters to make more effective use of a standard search engine. Understand that search engines use a cached copy of the crawled web to select and rank results.	Make use of a range of search engines appropriate to finding information that is required. Appreciate that search engines rank pages based on the number and quality of in-bound links.

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		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
DIGITAL LITERACY	Online safety	<p>Know how to keep themselves safe while using digital technology.</p> <p>Understand that information on the internet can be seen by others.</p> <p>Understand what to do if pupils see disturbing content online at home or at school.</p>	<p>Know how to keep safe and show respect to others while using digital technology.</p> <p>Understand that pupils should not share personal information online.</p> <p>Understand what to do if pupils have concerns about content or contact online.</p>	<p>Use digital technology safely and show respect for others when working online.</p> <p>Recognise unacceptable behaviour when using digital technology.</p> <p>Know who to talk to about concerns and inappropriate behaviour in school.</p> <p>Decide whether a web page is relevant for a given purpose or question.</p> <p>Use email and video conferencing in class.</p>	<p>Demonstrate that they can act responsibly when using computers. e.g. observing copyright if sampling music, and contributing positively to a shared wiki.</p> <p>Understand the difference between acceptable and unacceptable behaviours when using digital technology.</p> <p>Know who to talk to about concerns and inappropriate behaviour at home or in school.</p> <p>Decide whether digital content is relevant for a given purpose or question.</p> <p>Work collaboratively with classmates on a shared wiki.</p>	<p>Demonstrate that they can act responsibly when using the internet. e.g. using strong passwords to protect pupil identify, or commenting on web pages or blog posts.</p> <p>Discuss the consequences of particular behaviours when using digital technology.</p> <p>Know how to report concerns and inappropriate behaviour in a range of contexts.</p> <p>Decide whether digital content is reliable and unbiased.</p> <p>Work collaboratively with classmates on a class website or blog.</p>	<p>Show that they can think through the consequences of their actions when using digital technology.</p> <p>Identify principles underpinning acceptable use of digital technologies.</p> <p>Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts.</p> <p>Form an opinion about the effectiveness of digital content.</p> <p>Use online tools to plan and carry out a collaborative project.</p>
	Using technology beyond school	<p>Show an awareness of how IT is used for communication beyond school.</p>	<p>Show an awareness of how IT is used for a range of purposes beyond school.</p>				

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COMPUTING						
AUTUMN 1						
KNOWLEDGE	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Autumn 1 Unit	We are treasure hunters	We are astronauts	We are programmers	We are software developers	We are game developers	We are toy makers
Knowledge taught within unit	<p>Programmable robots can be controlled by inputting a sequence of instructions.</p> <p>An algorithm is a set of instructions.</p> <p>Debug a program means to find and correct a problem.</p> <p>Record, follow and input a set of instructions.</p>	<p>Understand that algorithms are sequences of instructions.</p> <p>Convert simple algorithms to programs.</p> <p>Predict what a simple program will do.</p> <p>Spot and fix (debug) errors in their programs.</p>	<p>Create an algorithm for an animated scene in the form of a storyboard</p> <p>Write a program in Scratch to create the animation</p> <p>Correct mistakes in their animation programs.</p>	<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> <p>Understand how to 'select, use and combine' a variety of software on a range of devices.</p> <p>Understand and use variables.</p>	<p>Understand computer networks including the Internet.</p> <p>Understand how networks can provide multiple services, such as the World Wide Web.</p>	<p>Understand the terms: micro: bit, algorithm.</p>

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COMPUTING						
AUTUMN 2						
KNOWLEDGE	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Autumn 2 Unit	We are digital artists	We are games testers	We are bug fixers	We are makers	We are cryptographers	We are computational thinkers
Knowledge taught within unit	Use different tools to make marks - different strokes, layers, lines, fill tool etc. Use the undo tool if they make a mistake or are experimenting with a new tool. Draw on top of a screen. Use images, colours, lines and shape to make a picture.	Make predictions of what a program will do and test these. Create sequences of instructions for a virtual robot to solve a problem. Work out strategies for playing a game well. Be aware of how to use games safely and in balance with other activities.	Develop a number of strategies for finding errors in programs Build up resilience and strategies for problem solving Increase knowledge and understanding of Scratch Recognise a number of common types of bug in software.	Convert and transfer a program written on screen to the micro: bit. Program using Make Code block-based environment.	Use technology safely, respectfully and responsibly. Recognise acceptable/unacceptable behaviour. C.5.1.3. Know a range of ways to report concerns and inappropriate behaviour.	Understand what algorithms are and name examples of types of algorithm e.g. random and linear search algorithms, binary search algorithms, quicksort algorithms.

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SPRING 1

KNOWLEDGE	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Spring 1 Unit	We are publishers	We are photographers	We are presenters	We are musicians	We are architects	We are connected
Knowledge taught within unit	<p>Take account of the interest of the audience when deciding what to include in their eBook. Respecting privacy and other people's copyright is important. Audio is sound and Clipart is a stock of images. Ebook stands for electronic book.</p>	<p>Consider the technical and artistic merits of photographs.</p>	<p>How to research on the web. How to structure, prepare and deliver a talk about a given topic or subtopic studied in another curriculum area. How to record a piece to camera. How to edit a movie using static images and green screen footage. Know what constructive, critical feedback is.</p>	<p>Play music using virtual instruments. Use the piano roll tool. Play a piece of music using live loops.</p>	<p>Understand the work of architects, designers and engineers working in 3-D.</p>	<p>Explain how search results are selected and ranked. Understand how to insert a hyperlink to include information from a source. Understand that sources on the Internet vary in reliability and credibility. Know what to do if they, or someone they know, are being bullied online.</p>

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SPRING 2						
KNOWLEDGE	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Spring 2 Unit	We are rhythmic	We are safe researchers	We are who we are	We are bloggers	We are web developers	We are advertisers
Knowledge taught within unit	Through a microphone, sounds can be recorded, played back and re-recorded if needed. My sprite is programmed by me to perform instructions. I can make complex patterns by using the repeat block. I can add effects to change the sound of my recordings.	Recognise common uses of information technology beyond school. Know where to go for help and support with any concerns about content or contact on the internet or other online technologies.	How to create a number of structured presentations. How to create a narrated presentation. Know what issues of trust and privacy are when sharing information.	Become familiar with blogs as a medium and a genre of writing. Develop a critical, reflective view of a range of media, including text.	Learn the name and function of components making up the school's network. Understand how information is passed between the components that make up the Internet. Know what the source code for a web page looks like and how it can be edited. Know how a website can be structured.	Know what makes an advert effective. Understand the purpose of creating a storyboard for an advert. Understand the term 'intellectual property'. Understand the differences between media, project files and exported movies. Define the terms: creative commons, export, rough cut, final cut, rushes and storyboard.

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COMPUTING

SUMMER 1

KNOWLEDGE	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Summer 1 Unit	We are detectives	We are animators	We are co-authors	We are artists	We are adventure gamers	We are AI developers
Knowledge taught within unit	Data can be structured as records with fields for information. Data can be organised in groups and in a table. Data can be structured as a tree. Data can be filtered and searched.	How animation works. How to use storyboards to plan an animation. How to create their own original characters, props and backgrounds for an animation. How to film, review and edit a stop-motion animation. How to record audio to accompany their animation. Know what constructively critical feedback to their peers is.	Understand the conventions for collaborative online work, particularly in wikis. Understand the need to be aware of their responsibilities when editing other people’s work. Know potential problems associated with the use of Wikipedia.	Programming art in Scratch. Making a repeating patterns in Scratch. Using Inkscape to create art in the later and early style of an artist.	How to plan a non-linear presentation. How to create text as part of a presentation. How to add and edit images in a presentation. How to use hyperlinks for navigation between the slides of a presentation. How to record and add audio narration to a presentation. How to use commenting tools to give feedback on a presentation.	Understand how decision trees can be trained automatically to classify data. Know how speech recognition works. Know how a neural net recognises images. Understand the terms: artificial intelligence, machine learning, classifier, decision tree, image recognition, sentiment analysis.

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SUMMER 2						
KNOWLEDGE	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Summer 2 Unit	We are TV chefs	We are zoologists	We are opinion pollsters	We are meteorologists	We are VR designers	We are publishers
Knowledge taught within unit	Algorithms are sequences of instructions and steps. Films can be recorded from different angles. The camera needs to be held still. Videos can be edited.	Recognise common uses of information technology beyond school. Know where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Understand some elements of survey design. Understand some ethical and legal aspects of online data collection. How to use the Internet to facilitate data collection.	Describing and measuring the weather. Recording the weather. Analysing the data. Analyse and predict the weather. Preparing a weather forecast. Giving a TV style weather forecast.	Know how information is passed between the components that make up the Internet. Understand what the source code for a web page looks like (e.g. html) and how it can be edited. Learn how a website can be structured.	Understand the importance of internet safety. Understand the importance of consent and responsible use of technology and the internet.