



Computing Progress Curriculum Plan



By the time the children leave St Peter’s School they will:

- All pupils will have equal, inclusive access to computing facilities and curriculum;
- Children know how to be safe and report unsafe behaviour;
- Computing to be presented as a creative and fascinating process in which children are encouraged to use their own initiative, imagination, reasoning and investigative skills;
- Children appreciate the relevance of computing in our society and that they see it as an essential tool for learning, communication, finding information and for controlling and understanding their environment;
- Children receive equal opportunity to develop their computing capability, with the use of computing being planned for in line with its status as a core National Curriculum subject;
- Differentiation is planned for in each area of the computing curriculum so that children achieve to the best of their ability;
- Children learn to work individually and collaboratively;
- Children have a heightened interest and awareness of computing through the regular display of their computing enhanced work in the classrooms and around the school, and the positive role modelling of staff towards an appropriate use of computing

<i>Computer Science</i>	EYFS	KS1		Lower KS2		Upper KS2	
CODING	Reception	Year 1 We are treasure hunters	Year 2 We are astronauts	Year 3 We are programmers	Year 4 We are software developers	Year 5 We are cryptographers	Year 6 We are toy makers
	<ul style="list-style-type: none"> • know how to turn a programmable toy on and off. • program a beebot to follow a simple algorithm. • become aware of the importance of sequencing instructions in the correct order. 	<ul style="list-style-type: none"> • understand a programmable robot can be controlled by inputting a sequence of instructions • to develop and record sequences of instructions as an algorithm • to program a robot to follow their algorithm • to debug programs 	<ul style="list-style-type: none"> • plan a sequence of instructions to move sprites in Scratch Jr • create, test and debug programs for sprites in Scratch Jr • work with input and output in Scratch Jr • use repetition in their programs • design costumes for sprites 	<ul style="list-style-type: none"> • plan and create an algorithm for an animated scene in the form of a storyboard • write a program in Scratch to create the animation, including characters, dialogue, costumes, backdrops and sound • review their animation programs and correct mistakes 	<ul style="list-style-type: none"> • develop an educational computer game using selection and repetition. • understand and use variables. • start to debug computer programs. • recognise the importance of user interface design, including consideration of input and output 	<ul style="list-style-type: none"> • be familiar with semaphore and Morse code • understand the need for private information to be encrypted • encrypt and decrypt messages in simple ciphers • appreciate the need to use complex passwords and to keep them secure • have some understanding of how encryption 	<ul style="list-style-type: none"> • how computers use stored programs to connect input to output • how to generate and evaluate designs in response to a brief • to plan a complex project by decomposing it into smaller parts • to work with physical components of a system • how to design and write a program for an embedded system • to use criteria to provide others with feedback on their work

		•to predict how their programs will work				works on the internet	
<i>Computer Science</i>	EYFS	KS1		Lower KS2		Upper KS2	
COMPUTATION and THINKING	Reception	Year 1 We are TV chefs	Year 2 We are game testers	Year 3 We are bug fixers	Year 4 We are makers	Year 5 We are game developers	Year 6 We are computational thinkers
	<ul style="list-style-type: none"> • understand that an algorithm is an instruction. • know that there is technology in the home and how it helps us. • know which technology to use for purpose. 	<ul style="list-style-type: none"> • to break down a process into simple, clear steps (an algorithm) • use different features of a video camera • use a video camera to capture moving images • edit a video to include an audio commentary • develop collaboration skills • discuss their work and think about how it could be improved 	<ul style="list-style-type: none"> • observe and describe carefully what happens in computer games • use logical reasoning to make predictions of what a program will do and test these predictions • think critically about computer games and their use • 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 	<ul style="list-style-type: none"> • develop a number of strategies for finding errors in programs. • build up resilience and strategies for problem solving. • increase their knowledge and understanding of Scratch. • recognise a number of common types of bug in software. 	<ul style="list-style-type: none"> • about the input-process-output model of computation • about the inputs and outputs available on a BBC micro:bit • to program using the MakeCode block-based environment • to test and debug programs they write, using an on-screen simulator and the micro:bit • how to convert and transfer a program written on screen to the micro:bit 	<ul style="list-style-type: none"> • create original artwork and sound for a game • design and create a computer program for a computer game, which uses sequence, selection, repetition and variables • detect and correct errors in their computer game • use iterative development techniques (making changes) to improve their game 	<ul style="list-style-type: none"> • develop the ability to reason logically about algorithms • to understand how some key algorithms can be expressed as programs • understand that some algorithms are more efficient than others for the same problem • understand common algorithms for searching and sorting a list
<i>Digital Literacy</i>	EYFS	KS1		Lower KS2		Upper KS2	
ON LINE SAFETY	Reception	Year 1 In all units	Year 2 In all units	Year 3 In all units	Year 4 In all units	Year 5 In all units	Year 6 In all units

	<ul style="list-style-type: none"> ● know that they need an adult present when going online. ● understand stranger danger can be online too. ● know to speak to an adult immediately if they see/ hear something online that seems wrong. ● know not to give out personal information online. 	<ul style="list-style-type: none"> ● use simple programmable toys safely and sensibly ● show respect for the work of their peers. ● understand filming must have consent ● how to use digital video cameras safely and to show respect to those they are filming ● understand the importance of not sharing videos more widely than is appropriate ● know what to do if they encounter material that concerns them. ● start to learn about copyright, recognising that they own the copyright in their original work and that this cannot be published or copied without their permission. ● always use safe search 	<ul style="list-style-type: none"> ● recognise advertising on websites and learn to ignore it ● be aware of online safety issues when using email ● think through privacy implications of their use of search engines ● be more discerning in evaluating online information ● understand the age restrictions of certain games and the need for age restrictions ● understand playing games in moderation ● understand that if encounter content or comments which cause distress, to let an adult know straight away ● where else to go for help ● once images are posted online, it is impossible to control what happens to them 	<ul style="list-style-type: none"> ● give examples of the risks posed by online communications. ● that comments made online that are hurtful or offensive are the same as bullying ● the need for caution when using an internet search for images ● consider copyright when downloading resources ● use safe search ● know what to do if they see something inappropriate ● know what information is ok to share and who with ● how to participate positively online ● how to protect your identity online ● know what to do if they encounter inappropriate images or other content ● discuss why schools and other organisations have 	<ul style="list-style-type: none"> ● independently, and with regard for e-safety, select and use appropriate communication tools to solve problems by collaborating and communicating with others within and beyond school ● they should not publish other people's pictures or tag them on the internet without permission ● that content put online is extremely difficult to remove ● that comments made online that are hurtful or offensive are the same as bullying. ● know what to do if they find an unsuitable image ● consider copyright when sourcing images or media ● develop safe search habits ● know what information they can share and how to participate positively in an online community ● know what 	<ul style="list-style-type: none"> ● develop their research skills to decide what information is appropriate. ● question the plausibility and quality of information. ● develop their understanding of online safety and responsible use of technology. ● collaborate with others online on sites approved and moderated by teachers. ● give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems. ● understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. ● understand the effect of online comments and show responsibility 	<ul style="list-style-type: none"> ● collaborate with others online on sites approved and moderated by teachers. ● give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems. ● understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. ● understand the effect of online comments and show responsibility and sensitivity when online. ● recognise that information on the internet may not be accurate or reliable and may be used for bias, manipulation or persuasion ● understand that the internet contains fact, fiction and opinion and begin to distinguish between them ● use strategies to verify information, e.g. cross-checking ● understand the need for caution when using an internet search for images
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		<ul style="list-style-type: none"> ● that they should provide positive, constructive feedback to one another on their work ● how to keep personal information private, recognising that the extent to which they need to protect their privacy is determined by the audience to which they are exposed. ● use audio recorders or microphones and audio recording software safely and sensibly ● that they have their data held in databases used by the school and to discuss some of the issues raised by this. ● understand the dangers of giving personal information on online forms 	<ul style="list-style-type: none"> ● facial recognition may allow personal information leaks ● know what is acceptable and unacceptable to photograph ● know how to use safe search ● is the information online always true ● develop some strategies to check this ● when posting pictures, to consider importance of keeping personal information private ● respect rules of using the computers and technology 	<p>strict rules on photography</p> <ul style="list-style-type: none"> ● know what to do if they encounter images online ● know their rights not to share information that they consider private ● evaluate reliability of online content ● know what is appropriate when collaborating on a shared resource ● know some of the legal and ethical requirements for online surveys ● know what information would be suitable to give in an online survey 	<p>parental permission is</p> <ul style="list-style-type: none"> ● know what to do if they come across any inappropriate content when looking on the web ● understand what illegal downloading of audio files is ● what can be appropriately shared online ● describe what constitutes as acceptable behaviour when commenting on others' posts ● become more discerning when evaluating content online ● how to obtain and use accurate data 	<p>and sensitivity when online.</p> <ul style="list-style-type: none"> ● understand they should not publish other people's pictures or tag them on the internet without permission ● know that content put online is extremely difficult to remove ● understand copyright ● develop safe search habits ● participate positively in an online community ● understand personal implications of playing games ● learn how information can be communicated in secret over open channels, including the internet, using cryptography ● understand why information on the web is encrypted ● understand the importance of password safety and security and what makes it safe 	<p>and what to do if they find an unsuitable image</p> <ul style="list-style-type: none"> ● understand that copyright exists on most digital images, video and recorded music ● understand the need to keep personal information and passwords private ● understand that if they make personal information available online it may be seen and used by others ● know how to respond if asked for personal information or feel unsafe about content of a message ● recognise that cyber bullying is unacceptable and will be sanctioned in line with the school's policy ● know how to report an incident of cyber bullying ● know the difference between online communication tools used in school and those used at home ● work safely with a range of tools and electronic equipment ● understand the need for permission to publish pictures used ● know and respect school's policy on publication of pictures
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		<ul style="list-style-type: none"> • they should only give information if they know it is safe to do so. 				<ul style="list-style-type: none"> • understand what online identity is • know what good practice is when searching for digital content • know how to prevent sharing private information • what the digital footprint is • know how easily web pages can be modified • understand how to give positive and constructive feedback to peers • understand that a GPS on most devices records location information • know how to switch of location recording • know what to do if something makes them uncomfortable online 	<ul style="list-style-type: none"> • understand what is classified as personal and private information and why this should not be published • respond respectfully to others even if you don't share the same opinion • understand why consent is important • understand the implications of sharing content publicly online, such as youtube • know what to do if they encounter inappropriate content • not to share personal information online • discuss facial recognition broadly and whether this is an invasion of privacy or needed in certain circumstances • how to judge the reliability of an online source • some strategies for dealing with online bullying • about appropriate rules or guidelines for a civil online discussion
	EYFS	KS1		Lower KS2		Upper KS2	
Information Technology MEDIA	Reception	Year 1 We are publishers	Year 2 We are animators	Year 3 We are co-authors	Year 4 We are bloggers	Year 5 We are web developers	Year 6 We are advertisers

		We are TV chefs	We are safe researchers				
	<ul style="list-style-type: none"> • know which technology to use for purpose. • use an ipad to take a photo/video . • be able to switch it on and find appropriate icon. 	<ul style="list-style-type: none"> • use different features of a video camera • use a video camera to capture moving images • edit a video to include an audio commentary • develop collaboration skills • discuss their work and think about how it could be improved • plan a small multimedia eBook • choose and import images • record audio commentary • add and format titles and other text • think carefully about protecting their privacy • respect other people's copyright • revise and improve their work 	<ul style="list-style-type: none"> • understand how animation works • use storyboards to plan an animation • create their own original characters, props and backgrounds for an animation • film, review and edit a stop-motion animation • record audio to accompany their animation • provide constructively critical feedback to their peers • develop collaboration skills through working as part of a group • <i>develop research skills through searching for information on the internet</i> • <i>improve note-taking skills through the use of mind mapping</i> • <i>develop presentation skills through creating and delivering a</i> 	<ul style="list-style-type: none"> • understand the conventions for collaborative online work, particularly in wikis. <ul style="list-style-type: none"> • be aware of their responsibilities when editing other people's work. • become familiar with Wikipedia, including potential problems associated with its use • practise research skills • write for a target audience using a wiki tool. • develop collaboration skills. • develop proofreading skills 	<ul style="list-style-type: none"> • become familiar with blogs as a medium and a genre of writing • create a sequence of blog posts on a theme • incorporate additional media • comment on the posts of others • develop a critical reflective view of a range of media, including text 	<ul style="list-style-type: none"> • the name and function of components making up the school's network • how information is passed between the components that make up the internet • what the source code for a web page looks like, and how it can be edited • how a website can be structured • how to add content to a web page 	<ul style="list-style-type: none"> • think critically about how video is used to promote a cause • storyboard an effective advert for a cause • work collaboratively to shoot original footage and source additional content • acknowledge intellectual property rights • work collaboratively to edit the assembled content to make an effective advert

			<i>short multimedia presentation</i>				
<i>Information Technology</i>	EYFS	KS1		Lower KS2		Upper KS2	
	Reception	Year 1 We are detectives	Year 2 We are Zoologists	Year 3 We are opinion pollsters	Year 4 We are meteorologists	Year 5	Year 6 We are AI developers
	DATA	<ul style="list-style-type: none"> • know how to log on. • use online programs eg Espresso to sort images according to simple criteria. • learn how to hold and begin to use and control a mouse. • begin to become familiar with the keyboard including using letters and basic keys eg space bar, enter/return, backspace • introduce the program Word 	<ul style="list-style-type: none"> • learn how data can be structured as records with fields for information • how data can be organized into groups and subgroups • how data can be structured as a tree • how data can be organized into a table • how data in a table can be filtered and searched 	<ul style="list-style-type: none"> • sort and classify a group of items by answering questions • collect data using tick charts or tally charts • take, edit and enhance photographs • use Google Sheets or Microsoft Excel to produce basic charts • record information on a digital map • summarise what they have learnt in a presentation 	<ul style="list-style-type: none"> • understand some elements of survey design. • understand some ethical and legal aspects of online data collection. • use the internet to facilitate data collection. • use charts to analyse data • interpret results 	<ul style="list-style-type: none"> • understand different measurement techniques for weather, both analogue and digital • use computer-based data logging to automate the recording of some weather data. • use spreadsheets to create charts • analyse data, explore inconsistencies in data and make predictions • practise using presentation and video software 	<ul style="list-style-type: none"> • how decision trees can be trained automatically to classify data • how speech recognition works • how a neural net recognizes images • to train a neural net to classify images • to train a machine learning system to identify sentiments • to consider some ethical principles in designing AT systems
<i>Information Technology</i>	EYFS	KS1		Lower KS2		Upper KS2	
	Reception	Year 1 We are digital artists	Year 2 We are photographers	Year 3 We are presenters We are who we are	Year 4 We are musicians We are artists	Year 5 We are architects	Year 6 We are publishers
	CREATIVITY	<ul style="list-style-type: none"> • children use Colour Magic/ Tate Paint to create marks and pictures. • Children select and use basic paint program tools for effect. 	<ul style="list-style-type: none"> • how to select and set brushes and colours • to create artwork in a range of styles on iPads • to use the undo function if they 	<ul style="list-style-type: none"> • consider the technical and artistic merits of photographs • use the iPad camera app • take digital photographs 	<ul style="list-style-type: none"> • develop their web-based research skills • structure, prepare and deliver a talk about a given topic or subtopic studied in 	<ul style="list-style-type: none"> • create a repeating percussion rhythm • play music using virtual instruments • compose or edit tunes using the piano roll (pitch and durations) tool 	<ul style="list-style-type: none"> • understand the work of architects, designers and engineers working in 3-D. • develop familiarity with a simple CAD

		<p>make mistakes, and to encourage experimentation</p> <ul style="list-style-type: none"> • to use multiple layers in their art • to transform layers • to paint on top of photographs 	<ul style="list-style-type: none"> • review, reject or pick the images they take • edit and enhance their photographs 	<p>another curriculum area</p> <ul style="list-style-type: none"> • record a piece to camera • edit a movie using static images and green screen footage • give constructive, critical feedback on recorded presentations <ul style="list-style-type: none"> • create a number of structured presentations • narrate presentations • consider issues of trust and privacy when sharing information 	<ul style="list-style-type: none"> • perform electronic music using pre-recorded loops, and create their own loops • create a multi-track composition or performance using multiple instruments • give feedback to others on their composition and performances <ul style="list-style-type: none"> • develop an appreciation of the links between geometry and art • become familiar with the tools and techniques of a vector graphics package • develop an understanding of turtle graphics • experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers • develop some awareness of computer generated art 	<p>(computer-aided design) tool</p> <ul style="list-style-type: none"> • develop spatial awareness by exploring and experimenting with a 3-D virtual environment • develop greater aesthetic awareness • how to plan a non-linear presentation • to create text as part of a presentation • to add and edit images in presentation • to use hyperlinks for navigation between the slides of a presentation • to record and add audio narration to presentation • to use commenting tools to give feedback on a presentation 	<p>respectful and responsible use</p> <ul style="list-style-type: none"> • design and produce a high-quality print document
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