St Peter's Church of England Primary School

Computing Curriculum: Topics, Coverage and Objectives

Foundation Stage

Computing and technology are vitally important subjects to deliver to EYFS children. Within the 7 EYFS strands, pupils should be taught to:

- Understand how mechanical devices (toys) work
- Use technology to find outcomes or answers
- Use technology to capture moments
- Understand programming in its simplest form
- know that information can be retrieved from computers

Our EYFS Curriculum documentation outlines the content more specifically to the theme

Key Stage One

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- 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.

Key Stage Two

Pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- 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.

		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
AUTUMN TERM	***Topic in Autumn 1***	**All About Me –** How have I changed since I was a baby? **Mechanical toys**	**All About Me –** How have me and my family changed over time? **Mechanical toys**	**We are Treasure Hunters** *Using programmable toys*	**We are Astronauts** *Programming on screen*	**We are Programmers** *Programming an animation*	**We are Software Developers** *Developing a simple educational game*	**We are Game Developers** *Developing an interactive game*	**We are App Planners** *Planning the creation of a mobile app*
	Links to Prior and Future Learning:	**Links to Reception coverage – explore different technology* **Links to Year 1's coverage – Using programmable toys*	**Builds on nursery coverage – show an interest in technological toys* **Links to Year 1's coverage – Using programmable toys*	**Links to Year 2 – programming on screen* **Links to Year 3 – programming an animation*	**Builds on Year 1- programming toys Pupils will already understand concept of programming.* **Links to Year 3 – programming an animation*	**Builds on Year 2 – programming on screen* *Pupils understand what an algorithm is and how to debug an error in a program.* **Links to Year 3 – debug computer programmes.*	**Builds on Year 2/3 – start to debug* **Links to Year 5 – developing an interactive game* *Pupils will begin to gain skills on creating a simple game*	**Builds on Year 4 – developing a simple education game* *Adding on to selection and repetition game, pupils will now use sequence and variables*	**Builds on Year 2-5 – solving problems (debugging programmes)* **Links to KS3 – design computational abstractions that model the behaviour of real-world problems.*
	Computing Skills and Concepts Progression:	***In this unit, the children will:*** *•show an interest in technological toys (baby toys)*	***In this unit, the children will:*** *•begin to explore different technology and use purposefully toys (family toys e.g. train track)*	***In this unit, the children will:*** *•understand that a programmable toy can be controlled by* *•inputting a sequence of instructions develop and record sequences of instructions as an algorithm* *•program the toy to follow their algorithm* *•debug their programs* *•predict how their programs will work.*	***In this unit, the children will:*** *•have a clear understanding of algorithms as sequences of instructions* *•convert simple algorithms to programs* *•predict what a simple program will do* *•spot and fix (debug) errors in their programs*	***In this unit, the children will:*** *•create an algorithm for an animated scene in the form of a storyboard* *•write a program in Scratch to create the animation* *•correct mistakes in their animation programs.*	***In this unit, the children will:*** *•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.*	***In this unit, the children will:*** *•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 and testing a series of small changes) to improve their game.*	***In this unit, the children will:*** *•develop an awareness of the capabilities of smartphones and tablets* *•understand geolocation, including GPS* *•identify interesting, solvable problems* *•evaluate competing products* *•pitch a proposal for a smartphone or tablet app.*

St Peter's Church of England Primary School

Computing Curriculum: Topics, Coverage and Objectives

	Topic in Autumn 2	**Animals** – What will I see at the zoo?	**Animals** – Are all animals the same?	**We are TV Chefs** *Illustrating an eBook*	**We are Games Testers** *Exploring how computer games work*	**We are bug fixers** *Finding and correcting bugs in programs*	**We are Toy Designers** *Prototyping an interactive toy*	**We are Cryptographers** *Cracking codes*	**We are Project Managers** *Researching the app market*
	Links to Prior and Future Learning:	**Links to Reception coverage – explore different technology* **Links to Year 1's coverage – Using programmable toys*	**Builds on nursery coverage – show an interest in technological toys* **Links to Year 1's coverage – Using programmable toys* *Links to Year 2's coverage – We are game testers.*	**Builds on EYFS – beginning to explore different technology* **Links to Year 2/3* *Taking better photos, Videoing performance*	**Builds on E-safety links* *Be aware of how to use games safely* **Links to Year 4/5* *Developing a simple educational game* *Developing an interactive game*	**Builds on Year 1/2 Debugging programmes* **Links to Year 5* *Debug the control and monitoring program*	**Builds on Year 1 Using programmable toys* **Builds on Year 3* *Recognise a number of common types of bugs.* **Links to Year 6* *Consider strategies to ensure the quality of a collaborative project.*	**Builds on E-safety for all Year groups* *Appreciate the need to use complex passwords and to keep them secure* **Links to Year 6* *Identify different components that must be successfully combined*	**Builds on Year 5* *Have some understanding of how encryption works on the web* *Links to KS3 –* *Use logical reasoning to compare the utility of alternative algorithms*
	Computing Skills and Concepts Progression:	***In this unit, the children will:*** *•show an interest in technological toys (animal toys that play music/speak)*	***In this unit, the children will:*** *•begin to explore different technology and use purposefully (animal toys that travel/move)* *•Share their thoughts/opinions about the technological toys.*	***In this unit, the children will:*** *•break down a process into simple, clear steps, as in an algorithm* *•use different features of a video camera* *•use a video camera to capture moving images develop collaboration skills* *•discuss their work and think about how it could be improved.*	***In this unit, the children will:*** *•describe carefully what happens in computer games* *•use logical reasoning to make predictions of what a program will do* *•test these predictions* *•think critically about computer games and their use* *•be aware of how to use games safely and in balance with other activities.*	***In this unit, the children will:*** *•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.*	***In this unit, the children will:*** *•design and make an on-screen prototype of a computer-controlled toy* *•understand different forms of input and output (such as sensors, switches, motors, lights and speakers)* *•design, write and debug the control and monitoring program for their toy.*	***In this unit, the children will:*** *•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 works on the web*	***In this unit, the children will:*** *•scope a project to identify different components that must be successfully combined* *•identify their existing talents and plan how they can develop further knowledge and skills* *•identify the component tasks of a project and develop a timeline to track progress* *•identify the resources they'll need to accomplish a project* *•use web-based research skills to source tools, content and other resources* *•consider strategies to ensure the quality of a collaborative project.*
Spring 1		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
S P R	***Topic in Spring 1***	**Journeys - The passage of time -** What will we do on a Bear Hunt?	**Journeys - The passage of time -** What changes happen over time?	**We are Painters** *Illustrating an eBook*	**We are Photographers** *Taking better photos*	**We are Presenters** *Videoing performance*	**We are Musicians** *Producing digital music*	**We are Artists** *Fusing geometry and art*	**We are Market Researchers** *Researching the app market*

St Peter's Church of England Primary School

Computing Curriculum: Topics, Coverage and Objectives

I N G T E R M	***Links to Prior and Future Learning:***	**Links to Reception coverage – using age appropriate software* **Links to Year 1's coverage – Using programmable toys* **Links to Year 2's coverage – We are researchers*	**Builds on nursery coverage – technology* **Links to Year 1's coverage – illustrating an eBook/producing an ebook.*	**Builds on Autumn 2 Year 1* *Illustrating an ebook* **Builds on EYFS – complete a simple program on a computer* **Links to Year 2* *Edit and enhance (save retrieve and change work)*	**Builds on Year 1* *Reflection on their work – choosing the best images* **Links to Year 2* *Gain skills in shooting, live video, holding the camera steady*	**Builds on Year 2 – Use a digital camera or camera app* **Links to Year 4* *Develop an awareness of how composition can enhance work in other media* **Links to Year 5* *Develop awareness of computer generated art*	**Builds on Year 3 – Edit video including adding narration and editing clips* **Links to Year 6* *Present research findings*	**Builds on all Year groups* *Evaluating own work* **Links to Year 6* *Analyse and interpret the information obtained from a focus group (Opinions of individual pupils)*	**Links to KS3* *Make appropriate use of data structure* *Design and develop modular programmes*
	Computing Skills and Concepts Progression:	***In this unit, the children will:*** *•Begin to show skill in making toys work by pressing parts, lifting flaps to achieve effects* *•Begin to know that information can be retrieved from computers*	***In this unit, the children will:*** *•complete a simple program on a computer* *•Use IT hardware to interact with age appropriate computer software*	***In this unit, the children will:*** *•use the web safely to find ideas for an illustration* *•select and use appropriate painting tools to create and change images on the computer* *•understand how this use of ICT differs from using paint and paper* *•create an illustration for a particular purpose* *•know how to save, retrieve and change their work* *•reflect on their work and act on feedback received.*	***In this unit, the children will:*** *•consider the technical and artistic merits of photographs* *•use a digital camera or camera app* *•take digital photographs* *•review and reject or pick the images they take* *•edit and enhance their photographs* *•select their best images to include in a shared portfolio.*	***In this unit, the children will:*** *•gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing* *•edit video, including adding narration and editing clips by setting in/out points* *•understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length.*	***In this unit, the children will:*** *•use one or more programs to edit music* *•create and develop a musical composition, refining their ideas through reflection and discussion* *•develop collaboration skills* *•develop an awareness of how their composition can enhance work in other media.*	***In this unit, the children will:*** *•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, in particular fractal-based landscapes.*	***In this unit, the children will:*** *•create a set of good survey questions* *•analyse the data obtained from a survey* *•work collaboratively to plan questions* *•conduct an interview or focus group* *•analyse and interpret the information obtained from interviews or a focus group* *•present their research findings.*
	Topic in Spring 2	**Under the Sea** – What is it like under the sea?	**Under the Sea** – How can we look after the sea?	**We are Collectors** *Finding images using the web*	**We are Researchers** *Researching a topic*	**We are Vloggers** *Making and sharing a short screencast presentation*	**We are HTML Editors** *Editing and writing HTML*	**We are Web Developers** *Creating a website about cyber safety*	**We are Interface Designers** *Designing an interface for an app*
	Links to Prior and Future Learning:	**Links to Reception coverage – using age appropriate software* **Links to Year 1's coverage – Using programmable toys*	**Builds on nursery coverage – technology* **Links to Year 1's coverage – illustrating an*	**Builds on EYFS* *Use IT hardware to interact with age appropriate computer software* **Links to Year 2*	**Builds on Year 1* *Know what to do if encounter pictures that cause on concern* **Links to Year 3*	**Builds on Year 2* *Develop presentation skills through creating and delivering a short multimedia*	**Builds on Year 3* *Developing their understanding of how the internet, the web and search engines work.*	**Builds on Year 4* *Understand some of the risks in using the web* **Links to Year 6*	**Builds on Year 5* *Developing research skills.* **Links to KS3* *Understand the hardware and*

St Peter's Church of England Primary School

Computing Curriculum: Topics, Coverage and Objectives

		**Links to Year 2's coverage – We are researchers*	*eBook/producing an eBook.*	*Develop research skills through searing for information on the internet (find and use pictures on the web)*	*Search for, and evaluate, online images *Links to Year 4 Understand some of the risks using the web.*	**Links to Year 4 Use hyperlinks to connect ideas and sources *Links to Year 5 Develop and refine their ideas*	**Links to Year 5 Understand some elements of how search engines select and rank results*	*Document their design decisions and the process they have followed.*	*software components that make up computer systems*
	Computing Skills and Concepts Progression:	***In this unit, the children will:*** *•Continue to show skill in making toys work by pressing parts, lifting flaps to achieve effects •Continue to know that information can be retrieved from computers and verbalise their findings*	***In this unit, the children will:*** *•complete a simple program on a computer and begin to explain how they have done this •Use IT hardware to interact with age appropriate computer software confidently*	***In this unit, the children will:*** *•find and use pictures on the web •know what to do if they encounter pictures that cause concern •group images on the basis of a binary (yes/no) question •organise images into more than two groups according to clear rules •sort (order) images according to some criteria •ask and answer binary (yes/no) questions about their images.*	***In this unit, the children will:*** *•develop collaboration skills through working as part of a group •develop research skills through searching for information on the internet •improve note-taking skills through the use of mind mapping •develop presentation skills through creating and delivering a short multimedia presentation.*	***In this unit, the children will:*** *•use a search engine to learn about a new topic plan, design and deliver an interesting and engaging presentation •search for, and evaluate, online images •create their own original images •create a screencast video of a narrated presentation •develop their understanding of how the internet, the web and search engines work.*	***In this unit, the children will:*** *•understand some technical aspects of how the internet makes the web possible •use HTML tags for elementary mark up •use hyperlinks to connect ideas and sources •code up a simple web page with useful content •understand some of the risks in using the web.*	***In this unit, the children will:*** *•develop their research skills to decide what information is appropriate •understand some elements of how search engines select and rank results •question the plausibility and quality of information •develop and refine their ideas and text collaboratively •develop their understanding of online safety and responsible use of technology.*	***In this unit, the children will:*** *•work collaboratively to design the app's interface •use wireframing tools to create a design prototype of their app •develop or source the individual interface components (media assets) they will use •address accessibility and inclusion issues •document their design decisions and the process they've followed.*
		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
SUMMER TERM	***Topic in Summer 1***	**Superheroes** – What special times have I had with my superhero?	**Superheroes** - Do all superheroes have the same special times?	**We are Storytellers** *Producing a talking book*	**We are Detectives** *Collecting clues*	**We are Communicators** *Collecting and analysing data*	**We are Co-Authors** *Producing a wiki*	**We are Bloggers** *Sharing experiences and opinions*	**We are App Developers** *Developing a simple mobile phone app*
	Links to Prior and Future Learning:	**Links to Reception coverage of using a range of technology for different purposes.*	**Builds on all nursery coverage taught throughout the year *Links to all Year 1 computing units as they begin producing outcomes using a range of technology *Links to Year 2 unit of 'taking better photographs'*	**Builds on EYFS Recognise a range of technology is used (video) *Links to Year 4 Write for a target audience*	**Builds on Year 1 Reflect on their use of ICT Develop skills working in a group *Links to Year 3 Be aware of broader issues with online safety*	**Builds on all Year groups Be aware of online safety *Links to Year 4 Develop collaboration skills Develop proofreading skills.*	**Builds on Year 1 Share resources with a target audience *Links to Year 5 Create a sequence of blog posts on a theme Develop a critical, reflective view of a range of media*	**Builds on Year 4 Be aware of their responsibility when editing other people's work. *Links to Year 6 Thoroughly test and evaluate their app.*	**Builds on previous Year 6 topics Design the app's interface Develop or source the interface components they will use *Links to KS3 Create, re-use, revise and re-purpose digital artefacts for a given audience*
	Computing Skills and	***In this unit, the children will:***	***In this unit, the children will:***	***In this unit, the children will:***	***In this unit, the children will:***	***In this unit, the children will:***	***In this unit, the children will:***	***In this unit, the children will:***	***In this unit, the children will:***

St Peter's Church of England Primary School

Computing Curriculum: Topics, Coverage and Objectives

	Concepts Progression:	*•Show skill in making toys work by pressing parts, lifting flaps to achieve effects* *•Know what information can be retrieved from computers and record this through drawing or words.* *•Begin to complete a simple programme on a computer*	*•Recognise that a range of technology is used in places such as homes and schools. Select and use technology for particular purposes (camera, video, music, art, etc.).*	*•use sound recording equipment to record sounds* *•develop skills in saving and storing sounds on the computer* *•develop collaboration skills as they work together in a group* *•understand how a talking book differs from a paper-based book* *•talk about and reflect on their use of ICT* *•share recordings with an audience.*	*•understand that email can be used to communicate* *•develop skills in opening, composing and sending emails* *•gain skills in opening and listening to audio files on the computer* *•use appropriate language in emails* *•develop skills in editing and formatting text in emails* *•be aware of online safety issues when using email.*	*•develop a basic understanding of how email works* *•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 the conventions for collaborative online work, particularly in wikis* *•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.*	*•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.*	*•become familiar with another programming toolkit or development platform* *•import existing media assets to their project* *•write down the algorithms for their app* *•program, debug and refine the code for their app* *•thoroughly test and evaluate their app.*
	Topic in Summer 2	***In the Garden*** *– What can we grow in the garden?*	***In the Garden*** *– Who lives in the garden?*	**We are Celebrating** *Creating a card digitally*	**We are Zoologists** *Collecting data about bugs*	**We are Opinion Pollsters** *Collecting and analysing data*	**We are Meteorologists** *Presenting the weather*	**We are Architects** *Creating a virtual space*	**We are Marketers** *Creating video and web copy for a mobile phone app*
	Links to Prior and Future Learning:	**Links to Reception coverage of using a range of technology for different purposes.*	**Builds on all nursery coverage taught throughout the year* **Links to all Year 1 computing units as they begin producing outcomes using a range of technology* **Links to Year 2 unit of 'taking better photographs'*	**Builds on previous Year 1 topics* *Begin producing using a range of technology* **Links to Year 2* *Take, edit and enhance photographs*	**Builds on Year 1* *Know what to do if they encounter pictures that cause concern* **Links to Year 3* *Understand some elements of survey design* *Gain skills in using charts*	**Builds on Year 2* *Collect data using tick charts or tally charts* *Sort and classify groups of items* **Links to Year 5* *Develop a critical reflective view of a range of media*	**Builds on Year 2* *Use simple charting software to produce other basic charts* **Links to Year 5* *Understand some elements of how search engines select and rank results*	**Builds on Year 3* *Understand some elements of survey design* **Links to Year 6* *Consider key marketing messages, including identifying a unique selling point*	**Builds on Year 3* *Videoing performance* *Making and sharing a presentation* **Builds on Year 4* *Producing digital music* **Links to KS3* *Undertake creative projects that involve selecting, using, and combining multiple applications* *Create, re-use, revise and re-purpose digital artefacts for a given audience*
	Computing Skills and Concepts Progression:	***In this unit, the children will:*** *•Show skill in making toys work by pressing parts, lifting flaps to achieve effects and*	***In this unit, the children will:*** *•Recognise that a range of technology is used in places such as homes and schools. Select and use technology for*	***In this unit, the children will:*** *•develop basic keyboard skills, through typing and formatting text*	***In this unit, the children will:*** *•sort and classify a group of items by answering questions* *•collect data using tick charts or tally charts*	***In this unit, the children will:*** *•understand some elements of survey design*	***In this unit, the children will:*** *•understand different measurement techniques for weather, both analogue and digital*	***In this unit, the children will:*** *•understand the work of architects, designers and engineers working in 3D*	***In this unit, the children will:*** *•consider key marketing messages, including identifying a unique selling point*

St Peter's Church of England Primary School

Computing Curriculum: Topics, Coverage and Objectives

		begin to explain how they work *•Know what information can be retrieved from computers and record this through drawing or words* *• Complete a simple programme on a computer and talk about it*	*particular purposes (camera, video, music, art, etc.).*	*•develop basic mouse skills* *•use the web to find and select images* *•develop skills in storing and retrieving files* *•develop skills in combining text and images* *•discuss their work and think about whether it could be improved.*	*•use simple charting software to produce pictograms and other basic charts* *•take, edit and enhance photographs* *•record information on a digital map.*	*•understand some ethical and legal aspects of online data collection* *•use the web to facilitate data collection* *•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* *•practise using presentation software and, optionally, video.*	*•develop familiarity with a simple CAD (computer-aided design) tool* *•develop spatial awareness by exploring and experimenting with a 3D virtual environment* *•develop greater aesthetic awareness.*	*•develop a printed flyer or brochure incorporating text and images* *•further develop knowledge, skills and understanding in relation to creating a website* *•further develop skills relating to shooting and editing video.*