

St Peter's CE Middle School Curriculum Overview

Subject: Computing

Year 5	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Topic: Internet Safety	Topic: Scratch Programming	Topic: Stone Age to Iron Age – Research Project	Topic: Internet Research Tool	Topic: Radio Station – Part 1	Topic: Radio Station- Part 2
	Concept: Identify a spam email; Explain what to do with spam email; Understand why they should cite a source; Explain the rules for creating a strong password; Create a strong password using a set of rules; Know that not everything they see online is true; Explain how to stay safe online; Identify unsafe online behaviour.	Concept: Design backgrounds and Sprites and rename Sprites appropriately? create simple controls for movement left and right make a Sprite move down the screen automatically Create a routine that allows my character to interact with other objects. Use simple co- ordinates to make a character move on screen Change timings to alter the speed of the object	Concept: Using different search engines to collect information on the stone age and Iron age Be able to identify reliable information from legitimate websites. Use the information to create a report on Publisher.	Concept: Understand different search engines and the services they provide Find answers to specific questions using the internet. Use the advanced search to refine my search results Use boolean operators to refine my results. Identify fact and opinion on the internet Be critical of information found on unreliable websites. Evaluate the reliability of websites using a range of techniques	Concept: Audacity Select, use and combine a variety of software on a range of digital devices to create content that accomplish given goals. Jingles Select, use and combine a variety of software on a range of digital devices to create content that accomplish given goals. Planning Podcasts Select, use and combine a variety of software on a range of digital devices to create content that accomplish given goals.	Concept: Recording Podcasts Select, use and combine a variety of software on a range of digital devices to create content that accomplish given goals. Advertising Select, use and combine a variety of software on a range of digital devices to create content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Playback and Performance Select, use and combine a variety of software on a range of digital devices to create content that accomplish given goals.

<p>Skills: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying and avoiding spam emails.</p> <p>In the context of citing the work of others. In the context of finding out how photos can be altered Knowing the consequences of not following online safety rules</p>	<p>Skills: Create sprites and backgrounds according to the game specification. Name sprites Use mouse and keyboard as controls Programme sprites to move independently. Upload images from the internet. Create sound effects.</p>	<p>Skills: Learn about featured templates, . Choose appropriate template to present information.</p>	<p>Skills: Collecting information from legitimate sites. Understanding the difference between primary and secondary based websites. Identify different types of images as in high and low resolution. Design their publication appropriately. Upload images Use different search engines to find a variety of information. Omit and add words from searches. Identify fact or opinion from a range of web based sources. Identify the domain of websites to aid in assessing their reliability Examine dates, writing style and cross reference to assess reliability</p>	<p>Skills: Use Audacity software as an introduction to sound recording. Combine existing sounds with their own unique voice content to create sounds in the style of a radio jingle. Plan appropriate digital content for presentation on a radio show podcast.</p>	<p>Skills: Use sound recording software to create appropriate digital content for presentation on a radio show podcast. Examine the features of advertisements and use the ideas to design their own advert to be recorded using audio software as part of their radio station or podcast.</p>
<p>Outcome: Create a power-point on on-line safety.</p> <p>Increase knowledge on how to be safe when on-line.</p>	<p>Outcome: Learn basic computer programming that enables students to create a game.</p> <p>Creativity Knowledge and Skill Computer design Understand basic programming and algorithms.</p>	<p>Outcome: Students should know how to develop and refine their searches once given a specific topic. Be able to give a short presentation.</p>	<p>Outcome: Students will discover how different search engines produce differing results and hits, as well as learning search techniques to give them more accurate results.</p>	<p>Outcome: Students should be able to create their own sounds by recording, editing and playing. Research and plan digital content for a radio podcast.</p>	<p>Outcome: Use software to create and present digital content for a radio podcast. Design and record a persuasive radio advert for a product or service.</p>

Year 6	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Topic: Internet Safety	Topic: Programming- Scratch	Topic: Excel Spreadsheets	Topic: Film Making	Topic: History of Computers	Topic: Microbot
	Concept: To know what you can share online. To understand what a positive digital footprint is. To know what phishing and scams are. To know how to protect yourself online. To know how to stand up to others online.	Concept: To know how to work through problems and debug and correct errors in programming. To know how to design, write and debug programs that control or simulate physical systems. To know how to solve problems by decomposing them into smaller parts and detecting and correcting errors in algorithms and programs.	Concept: To know what a spreadsheet is and what it does. To know what the cells are called. To know where formulae is entered.	Concept: Select, use and combine a variety of software to design and create a range of programs, systems and content that accomplish given goals Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Concept: Learn about the development of computers Create a timeline. Relevant people of the computing world. Who was Ada Lovelace? Research a key figure of computing and create a presentation about that person. Understand the history of computers.	Concept: Learn how to program mBot to move in different directions Apply learning about movement to program mBot to travel in shape pathways Learn how to program robots to display light sequences and produce sounds Learn how to program a robot to use the ultrasonic sensor to avoid collisions Understand the language of directional algorithms.
	Skills: Describe ways to keep personal information private online by using safety tools and privacy settings.	Skills: Create a background and a sprite To create a single routine for "Control" of players and enable objects to interact.	Skills: To enter data into cells and format it To add borders to tables. To enter formulae into a spreadsheet and be able to use	Skills: Use appropriate software and other tools effectively to write a film script. ocate and check appropriate digital content, and provide	Skills: Define what is meant by a computer network Learn which devices are needed to create a network	Skills: Learn how to attach connect and program components to expand the capabilities of a robot (mBot)

<p>Describe how to find and ask for help if someone feels unsafe online. Build positive and healthy online relationships and friendships. Employing strategies to respond to hurtful online behaviour, in ways that keep children safe and healthy. Identify sources of support that can help friends and peers if they are experiencing hurtful behaviour online.</p>	<p>To create objects that can be collected by players. To add sounds to objects. To create a routine to keep score throughout a game and end the game when a criteria is met. To use sequence, selection, repetition in programs. To work with variables. To improve and assess their own and others' programs.</p>	<p>auto sum and average. To change data in a spreadsheet.</p>	<p>accurate crediting of sources. Use digital recording devices to film and import into video editing software.</p>	<p>Compare wired and wireless technologies Define 'The Internet' and describe how data is travels across it Explain the differences between the Internet, its services, and the World Wide Web Describe WWW components and how they work together Programming</p>	<p>Program the mBot to turn on an LED lamp when the room becomes dark Program the mBot to show different light colours and tones. depending on temperature Program the mBot to pick up an object and to place it in a different location.</p>
<p>Outcome: To keep themselves and others safe online and know how to ask for help when they need it. To understand the consequences of what they share online for now and the future.</p>	<p>Outcome: To design, write and debug programs that accomplish specific goals, controlling or simulating physical systems. To solve problems by decomposing them into smaller parts and detecting and correcting errors in alogarithms and programs.</p>	<p>Outcome: To create their own spreadsheet, and use formulae and symbols to find answers to questions and make presentation look good.</p>	<p>Outcome: The aim of this unit is to allow students to explore various aspects of film-making. In doing so, they must choose and use appropriate software in order to complete tasks such as writing a script, researching information, filming and editing. As well as using digital devices for recording</p>	<p>Outcome: To understand the importance of computing networks. To be able to do independent research on the history of computers. Be able to present their findings on a Powerpoint.</p>	<p>Outcome: Sequence instructions from the perspective of another create their own (appropriate) Shortened form of instructions 'Checking' algorithms before typing them in</p>

Year 7	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Topic: E-Safety	Topic: Kodu introduction Block-based programming	Topic: How a computer works.	Topic: Scratch – Pacman	Topic: App Creation Part 1	Topic: App Creation Part 2
	Knowledge/ Concepts: Take notes Online Safety Social networking Research Presentations Evaluation Text, videos, Images and links	Knowledge/ Concepts: Creativity Knowledge and Skill Computer design Understand algorithms Programme language	Knowledge/ Concepts: What are the main parts of a computer? Identify common computer peripherals and describe their function. What is the difference between inputs and outputs? What is an operating system? How does the keyboard work? Understand how computer networks work including the internet; Understand how computer networks can provide multiple services, such as the world wide web; understand the opportunities Computer networks offer for communication and collaboration. Understand what a search engine is and	Knowledge/ Concepts: Design, use and evaluate computational abstractions that model the state and behaviour of real world problems, and physical systems. Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem. Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of design and develop modular programs that use procedures or functions.	Knowledge/ Concepts: Design, use and evaluate computational abstractions that model the state and behaviour of real world problems, and physical systems. Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem. Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of design and develop modular programs that use procedures or functions.	Knowledge/ Concepts: Identify when a computer task needs to be broken down (decomposition) Impliment and customise the graphical user interface to meet the needs of the programmer. Use a block based programming language to create a sequence. Use user input in an event driven programming environment. Use variables in an event driven programming environment. Update the app to display the uses score.

			how to search using words. Understand how to communicate online	Understand simple Boolean logic and some of its uses in circuits and programming;	Start your own app project.	
	<p>Skills: Use www.thinkyouknow.co.uk Make notes on social networking and cyber bullying. Information on how young people can stay safe online. Choose one other aspect to research from the page. Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies</p>	<p>Skills: Understand the concepts of creating a basic game. Learn how to create a world and control characters. Learn how to create pathways and scoring systems. Learn how to clone objects. Learn how to use timers in Kodu. How you can include creatables in Kodu.</p>	<p>Skills: Be able to identify the main parts of a computer. Explain the purpose of each computer part. To understand the importance of the computer parts and their necessity to computer function. Identify the differences between inputs and outputs. Gain knowledge on relevant people of the computing world. Be able to compare different operating systems. To learn the functions of a keyboard.</p>	<p>Skills: Understand how to use algorithms. Design and create their own game. Improve game design vocabulary. Independently, create another level to their game. Be able to debug game problems. Test out each others games and give constructive feedback.</p>	<p>Skills: Develop skills in block based programming. Understand the process of event driven programmes. Develop skills in debugging and solving problems. Be able to use the correct terminology when referring to app development.</p>	<p>Skills: Understand that block based programming can only be done in sequence. Understand the importance of decomposition and using it in their approach to app development. Developing app creation skills to create more app's independently.</p>
	<p>Outcome: Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns</p>	<p>Outcome: Understand key algorithms that reflect computational thinking. Design and develop modular programmes that uses procedures and functions.</p>	<p>Outcome: To understand the important parts of a computer and how a computer works. Gain knowledge on the history of computers and the people who invented them.</p>	<p>Outcome: Be able to design their own game and understand how to correct errors.</p>	<p>Outcome: Understand the process of app development.</p>	<p>Outcome: Create their own app on code.org</p>

Year 8	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Topic: E-safety, Cyber Security and Digital Footprints	Topic: JavaScript	Topic: How data is represented in computers - Binary	Topic: Web Design	Topic: Introduction to Python	Topic: Student Project Using Blender
	Concept: Understand the hardware and software components that make up computer systems, and how they communicate with one another and other systems. Understand how instructions are stored and executed within a computer system; Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy, recognise inappropriate content, contact and conduct and know how to report concerns.	Concept: Design, use and evaluate computational abstractions that model the state and behaviour of real world problems, and physical systems. Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem. Make appropriate use of data structures; design and develop modular programs that use procedures or functions. Undertake creating projects that involve selecting, using and combining multiple applications preferably across a range of devices, to achieve goals.	Concept: Understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers. Understand how data of various types can be represented and manipulate digitally, in the form of binary digits. Understand how numbers can be represented in Binary.	Concept: Design, use and evaluate computational abstractions that model the state and behaviour of real world problems, and physical systems. Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem. Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems;	Concept: Understand basic algorithms that reflect computational thinking; Use logical reasoning to compare the utility of alternative algorithms for the same problem. Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; Make appropriate use of data structures; design and develop modular programs that use procedures or functions.	Concept: Design, use and evaluate computational abstractions that model the state and behaviour of real world problems, and physical systems. □ Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem. Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; Design and develop modular programs that use procedures or functions. Undertake creating projects that involve selecting, using and combining multiple applications

				Undertake creating projects that involve selecting, using and combining applications preferably across a range of devices, to achieve challenging goals.		Create, re-use, revise and re-purpose digital artefacts for a given audience with attention to trustworthiness, design and usability.
<p>Skills: Research why LAN (Local area networks) are different to the internet Create a research document on the following. Use www.thinkyouknow.co.uk to aid your research further. Explain that the document is going to explain what goes on in the digital world around us and how to stay safe with it. What are your rights and responsibilities in a digital world? How can you use social networks safely and responsibly? What should you avoid doing? Share presentations to class. Embed images and videos into their presentations where ever it is possible.</p>	<p>Skills: Understand the hardware and software componants that make up computer systems. Understand how instructions are stored and executed in computer systems. Recodnise inappropriate use and how report it accordingly. Continue to work through the code academy course at children’s own pace. If someone becomes stuck on something that is not easily resolved by the teacher then share with the whole class and problem solve together. Share work at the end of the meeting.</p>	<p>Skills: Learn how to use binary to design and edit computer programmms. Understand binary sequencing. Understand different coding systems.</p>	<p>Skills: Design their own Webpage. Understand several key algorithms that reflect computational thinking. use logical reasoning to compare algorithms.</p>	<p>Skills: Understand basic programming skills in Python. Declare a variable; Write comments within Python.</p>	<p>Skills: Develop software editing skills in Blender. Be able to create animation objects. Programme the objects to move. Create short films of animation objects.</p>	

	<p>Outcome: To understand how a computer works and the communication system that it uses to carry out actions. Understanding how to work safely in a computerised world.</p>	<p>Outcome: To be able to do basic computer programming using JavaScript.</p>	<p>Outcome: To understand different types of coding systems.</p>	<p>Outcome: Create your own webpage using html 5. Model finding the www.codeavenge.com webpage. And beginning the training. There are 7 hours of training. Create your own Webpage.</p>	<p>Outcome: To understand and use algorithms to create a webpage.</p>	<p>Outcome: Be able to create an animation object that the students can programme to move.</p>
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