St Peter's CE Middle School Curriculum Overview

Subject: Computing

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Topic: **Internet Safety**	**Topic:** **Scratch Programming**	**Topic:** **Internet Research Iron Age – Research Project**	**Topic:** **Video Production**	**Topic: Radio Station – Part 1**	**Topic: Radio Station- Part 2**
Year 5	**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:** 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 Using different search engines to collect information on the stone age and Iron age Be able to identify reliable information	**Concept:** Learners will be introduced to video as a media format. Learners will begin by explaining what the medium of video is. Learners will explore the capabilities of a digital device that can be used to record video. Be able to explore a variety of filming techniques. Learners will plan a video by creating a storyboard. Their storyboard will describe each scene, and will include a script, camera angles, and filming techniques. They will then explore key editing 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.

		from legitimate websites**.** Use the information to create a report on Publisher.			
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. 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	**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. .	**Skills:** Collecting information from legitimate sites. Understanding the difference between primary and secondary based websites. 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 Learn about featured templates, . Choose appropriate template to present information.	**Skills:** Be able to identify and find features on a digital video recording device. I can experiment with different camera angles. Be able to suggest filming techniques for a given purpose. Be able to decide which filming techniques I will use. Be able to select the correct tools to make edits on a video.	**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.	**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.

Outcome: Create a power-point on on-line safety**.** Increase knowledge on how to be safe when on-line.	**Outcome:** Learn basic computer programming that enables students to create a game. Creativity Knowledge and Skill Computer design Understand basic programming and algorythms**.**	**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. Students should know how to develop and refine their searches once given a specific topic. Be able to give a short presentation.	**Outcome:** I can compare features in different videos. I can explain how to improve a video. I can recognise that my choices when making a video will impact the quality of the final outcome. I can evaluate my video and share my opinions.	**Outcome:** Students should be able to create their own sounds by recording, editing and playing. Research and plan digital content for a radio podcast.	**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.

	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:** **Flowcharts**
Year 6	**Concept:** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour 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 alogarithms 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. Understand the advantages of spreadsheets over comparative manual methods. Explore further functions. Select data and create graphs with appropriate formatting. Design their own spreadsheet for a specific purpose and present it appropriately.	**Concept:** Plan and write a script using appropriate software; Search for relevant information using appropriate websites; Use a digital video camera (or similar device) to record; Plan suitable questions to ask an interviewee; Import video files into video editing software. Plan additional elements for film-making such as locations and props; Frame an appropriate filming shot when interviewing; Arrange video files to form a complete film. Structure the timing of sections to meet a given running time;	**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:** 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. Children are introduced to flowcharts and practise reading them as a sequence of instructions, they then design their own. I can draw and interpret a

					Preview a movie project using software and refine, based on the preview;		flowchart with the correct symbols.
					.		
Skills: Describe ways to keep personal information private online by using safety tools and privacy settings. 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.	**Skills:** Create a background and a sprite To create a single routine for "Control" of players and enable objects to interact. 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.	**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 auto sum and average. To change data in a spreadsheet. Order data using the Sort function and produce a graph to present the data. Create totals and averages for existing data; sort according to either column Students are given an investigation where the solution to a problem is best calculated using a spreadsheet.	**Skills:** Use appropriate software and other tools effectively to write a film script. ocate and check appropriate digital content, and provide accurate crediting of sources. Use digital recording devices to film and import into video editing software.	**Skills:** Define what is meant by a computer network Learn which devices are needed to create a network 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	**Skills:** Follow a sequence of written instructions in a flowchart. Draw a flowchart using the correct symbols. Connect symbols in a sequence
Outcome:	**Outcome:**	**Outcome:**	**Outcome:**	**Outcome:**	**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. | 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. | To create their own spreadsheet, and use formulae and symbols to find answers to questions and make presentation look good. | 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 | 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. | To understand what a flowchart is. To be able to interpret different flowcharts. To make connections between flowcharts and algorithims. To make connections in other computing topics with flowcharts such as block-based programming. . |

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Topic: **E-Safety**	**Topic:** **Kodu introduction Block-based programming**	**Topic:** **Computing Systems**	**Topic:** **Scratch – Pacman**	**Topic:** **App Creation Part 1**	**Topic:** **App Creation Part 2**
Year 7	**Knowledge/ Concepts:** Take notes for future reference. Learn about online safety, in particular, cyberbullying. Learn how to stay safe when social networking Research different topics arount cyberbullying. Use text, videos, Images as evidence for coursework presentation. Add links and give tips on experience and how to stay safe.	**Knowledge/ Concepts:** Carry over knowledge and Skill from previous units on block-based programming to help with unit tasks. Use computer design and creativity to develop their own game. Understand Kodu Programme language in terms of block-based algorithims. make appropriate use of design and develop modular programs that use procedures or functions	**Knowledge/ Concepts:** Recall that a general-purpo computing system is a dev for executing programs Recall that a program is a sequence of instructions that specify operations that are to be performed on data Describe the function of the hardware components used in computing systems Describe how the hardware components used in computing systems work together in order to execute programs Analyse how the hardware components used in computing systems work together in order to execute programs	**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	**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. Start your own app project.	**Knowledge/ Concepts:** Use user input in a block based programming language Use decomposition to break down your app into more manageable steps. Include variables in your app project. Use user input in a block based programming language to include sequencing and selection. Swap apps with another group and test each out. Leave feedback giving constructive comments on errors and areas for improvement.

				procedures or functions. Understand simple Boolean logic and some of its uses in circuits and programming;		
Skills: Usewww.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	**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.	**Skills:** You will be able to have an understanding of how general-purpose computers execute programs. understanding of the hardware components used in computer systems. Be aware of the functions that operating systems provide	**Skills:** Understand how to use algorythims. 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 eachothers games and give constructive feedback.	**Skills:** Develop skills in block based programming. Understand the process of event driven programms. Develop skills in debugging and solving problems. Be able to use the correct terminology when referring to app development.	**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 devellpment. Developing app creation skills to create more app's independently.
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	**Outcome:** Understand key algorythms that reflect computational thinking. Design and develop modular programmes that uses procedures and functions.	**Outcome:** To focus on what sets these devices apart from other purpose-built machinery. To introduce learners to the hardware components, Form a concise picture of input and output components.	**Outcome:** Be able to design their own game and understand how to correct errors.	**Outcome:** Understand the process of app development.	**Outcome:** Create their own app on code.org

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 8	**Topic:** **E-safety / Cyber Security and Digital Footprints**	**Topic:** **Html – Web Design**	**Topic:** **How data is represented in computers - Binary**	**Topic:** **Introduction to Python**	**Topic:** **Student Project using Blender.Training stage**	**Topic:** **Student Project Using Blender**
	Concept: Develop an understanding of the precautations that can be taken on-line. Explain what cybercrime is and its impact. Explain the difference between data and information Identify what happens to data entered online Explain the need for the Data Protection Act Implement strategies to minimise the risk of data being compromised. Define hacking in the context of cyber security Explain how a DDoS attack can impact users of online services Identify strategies to reduce the chance of	**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; Undertake creating projects that involve selecting, using and combining applications preferably across a range of devices, to achieve challenging goals.	**Concept:** Understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers. Understand how date of various types can be represented and manipulate digitally, in the form of binary digits. Understand how numbers can be represented in Binary.	**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:** . Understand how to use Blender to create characters and objects. Create a basic animation that allows the characters and objects to move. Understand a range of ways to use technology safely, respectfully, responsibly and securely. Undertake creating projects that involve selecting, using and combining multiple applications	**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. Create, re-use, revise and re-purpose digital

a brute force attack being successful.					artefacts for a given audience with attention to trustworthiness, design and usability.
Skills: . Learn protection methods such as firewalls, anti-malware, and password authentication Be able to reflect on their own use of digital technologies. Be able to collaborate with peers. Be able to create a PowerPoint which they can present to their peers. Incorporate tips and advice for their peers. Identify strengths and weaknesses in their work,	**Skills:** Design their own Webpage. Understand several key algorithms that reflect computational thinking. use logical reasoning to compare algorithms	**Skills:** Learn how to use binary to design and edit computer programms. Understand binary sequencing. Understand different coding systems.	**Skills:** Understand basic programming skills in Python. Declare a variable; Write comments within Python	**Skills:** Drawing on skills and knoweedge from Art to create an animation background. Using Blenders animation software such as frames to help move characters.	**Skills:** Develop software editing skills in Blender. Be able to create animation objects. Programme the objects to move. Create short films of animation objects.
Outcome: Be able to identify the risks of using the internet and explain how they can protect themselves on-line. Know how to report any concerns or abuse.	**Outcome:** Create your own webpage using html 5. Model finding the www.codeavengers.com webpage. And beginning the training. There are 7 hours of training. Create your own Webpage.	**Outcome:** To understand different types of coding systems.	**Outcome:** To understand and use algorythims to create a webpage	**Outcome:** To be able to use complex software systems. To understand how animation is created.	**Outcome:** Be able to create an animation object that the students can programme to move.