The Ellesmere Port C of E College

Computer Science

Part of the Frank Field Education Trust

KS3 Curriculum Plan 2022-23

Year 7

	LP1	LP2	LP3	LP4	LP5
TOPIC	***Networks***	***Networks and Scratch Programming***	***Scratch Prgramming***	***Scratch programming and spreadsheets***	***Spreadsheets***
Knowledge	**Networks (part 1): from semaphores to the internet - Recognising networking hardware and explaining how networking components are used for communication.**	**Networks (part 2): from semaphores to the internet -** Recognising networking hardware and explaining how networking components are used for communication.	**Programming essentials in Scratch: part 1** - Applying the programming constructs of sequence, selection, and iteration in Scratch.	**Programming essentials in Scratch: part 2** - Applying the programming constructs of sequence, selection, and iteration in Scratch. **Modelling data: spreadsheets (Part 1)** Sorting and filtering data and using formulas and functions in spreadsheet software	**Modelling data: spreadsheets (Part 2)** Sorting and filtering data and using formulas and functions in spreadsheet software
Skills	Use each component to build a series of increasingly complicated network diagrams. Provide examples of specific technologies currently used to implement such connections. Confidently discuss familiar examples where bandwidth is important.	Explain how data travels between computers across the internet. Explain the difference between the internet, its services, and the world wide web. Describe how services are provided over the internet and the context in which they are used. Show how components such as servers, browsers, HTTP and HTTPS protocols work together.	Describe, define and modify a sequence as instructions performed in order with each executed in turn. Predict the outcome of a sequence that includes variables. Identify that selection uses conditions to control the flow of a sequence. Modify a programme to include selection. Create conditions that use comparison operators and logic operators.	(Scratch) Identify where selection statements can be used in a programme that include comparison and logical operators. Describe the need for iteration. Implement count-controlled iteration in a programme. Design and apply programming constructs to solve a problem. (Spreadsheets) Use formatting techniques in a spreadsheet. Use basic formulas with cell references to perform calculations in a spreadsheet	Use the autofill tool to replicate cell data. Explain the difference between data and information with specific reference to primary and secondary sources. Collect and analyse data. Use functions and conditional formatting within a spreadsheet.
Key Vocab	Networks, Protocol, Server, Wireless, Bandwidth, Internet.	Packets, addressing, World Wide Web, Context, Connectivity, Geolocation, HTTP(S).	Programming, sequence, modify, executed, conditions, comparison operators, logic operators.	Sequence, selection, iteration, sorting, filtering, formulas, cell reference.	Autofill, replicate, data, sources, analyse, functions, formatting.

Year 8

	LP1	LP2	LP3	LP4	LP5
TOPIC	***Developing for the web (Part 1)***	***Developing for the web (Part 2)***	***Computing systems (Part 1)***	***Computing systems (Part 2) and Mobile app development (Part 1)***	***Mobile app development (Part 2)***
Knowledge	**Developing for the web (Part 1)** - Using HTML and CSS to create webpages.	**Developing for the web (Part 2) -** Using HTML and CSS to create webpages.	**Computing systems (Part 1) -** Exploring the fundamental elements that make up a computer system.	**Computing systems (Part 2)** - Exploring the fundamental elements that make up a computer system. **Mobile app development (Part 1) -** Using event-driven programming to create an online gaming app.	**Mobile app development (Part 2) -** Using event-driven programming to create an online gaming app.
Skills	Use HTML to structure static web pages. Displaying images within a web page. Apply HTML tags to construct a web page structure form a provided design. Modify the appearance of a web page using HTML tags and CSS.	Use search technologies effectively. Create hyperlinks to allow users to navigate between multiple web pages. Implement navigation to complete a functioning website.	Explain the difference between a general-purpose computing system and a purpose-built device. Use logic gates to construct logic circuits and associate these with logical operators and expressions.	(Computing systems) Identify examples of artificial intelligence and machine learning in the real world. Associate the use of artificial intelligence with moral dilemmas. Explain the implications of sharing programme code. (Mobile app development) Identify when a problem needs to be broken down. Implement and customise GUI elements to meet the needs of the user. Use user-input and variables in an event-driven programming environment. Develop a partially complete application to include additional functionality.	Identify and fix common coding errors. Pass the value of a variable into an object. Establish user needs when completing a creative project. Apply decomposition to break down a large problem into more manageable steps. Use a block-based programming language to create a sequence.
Key Vocab	Hypertext, Tag, Formatting, Structure, Style, Attribute, Search Engine.	Search technologies, issues, hyperlinks, navigate, implement, functioning, website.	Executing, sequence, instructions, operations, purpose-built, components, architecture.	Logical, complex, artificial intelligence, construct, structure, benefits, formatting.	Style, static, crawl, rank, searches, impact, technologies, navigate.

Year 9

	LP1	LP2	LP3	LP4	LP5
TOPIC	***Cybersecurity (Part 1)***	***Cybersecurity (Part 2)***	***Python programming with sequences of data (Part 1)***	***Python programming with sequences of data (Part 2) and Physical computing (Part 1)***	***Physical computing (Part 2)***
Knowledge	**Cybersecurity (Part 1)** - Identifying how users and organisations can protect themselves from cyberattacks.	**Cybersecurity (Part 2)** - Identifying how users and organisations can protect themselves from cyberattacks. Know the difference between data and information.	**Python programming with sequences of data (Part 1) -** Manipulating strings and lists. Creating a programming project.	**Python programming with sequences of data (Part 2) -** Manipulating strings and lists. Creating a programming project. **Physical computing (Part 1)** - Sensing and controlling with the micro:bit.	**Physical computing (Part 2)** - Sensing and controlling with the micro:bit.
Skills	Critique online services in relation to data privacy. Identify strategies to reduce the chance of a brute force attack being successful and the need for the Computer Misuse Act. Examine how different types of malware causes problems for computer systems, listing the common malware threats.	Compare security threats against probability and the potential impact to organisations. Explain how networks can be protected from common security threats. Identify the most effective methods to prevent cyberattacks.	Write programs that display messages, receive keyboard input and use simple arithmetic expressions in assignment statements. Locate and correct common syntax errors. Use selection statements to control the flow of program execution. Perform common operations on lists or individual items, strings or individual characters. Effective use of iteration.	(Programming) Use of variables to keep track of counts and sums. Combine key programming language features to develop solutions to meaningful problems. (Physical computing) Use a development environment to write, execute and debug a python program for the micro:bit. Write programs that use the micro:bit's built-in input and output devices.	Write programmes that use GPIO pins to generate output and receive input. Write programs that communicate with other devices by sending an receiving messages wirelessly. Design a physical computing artefact purposefully. Decompose the functionality of a physical computing systems into simpler features. Implement a physical computing project, while following, revising and refining the project plan.
Key Vocab	Data privacy, Data protection, Security risk, Compromised, Hacking, Cyber threats, Malware.	Malicious, Probability, organisations, protected, common, prevent, cyberattack.	Arithmetic, syntax, selection, execution, operations, strings, iteration.	Loops. Lists, variables, solutions, micro:bit, output, communicate.	Wirelessly, physical, artefact, audience, decompose, refining, implement.