Share Multi Academy Trust

Curriculum Plan

Subject:	**Computing**	**Year**	**8**	**Ability**	**All**

Term / Date(s)	**Topic 1 (6-8 Weeks)**	**Topic 2 (6-8 Weeks)**	**Topic 3 (6-8 Weeks)**	**Topic 4 (8-10 Weeks)**	**Topic 5 (3-4 Weeks)**
Topic	E-Safety: Computer Viruses	Office Skills and Productivity	Computer Systems, Networks and the Internet	Programming: Python using Turtle	Careers
Topic overview **Pupils will learn…**	In this unit, students will learn what a computer virus is and how they can infect and harm computer systems. They will also learn that not all viruses are the same, do different things within computer systems and how to spot the signs that a computer might be infected and how to prevent getting them.	In this unit, students will develop a number of digital literacy productivity skills that will enable them to use computer systems more efficiently and creatively through the use of keyboard shortcuts and the creation of digital graphics.	This unit uses some of the recap from computer systems theory from Year 7, looking back at how data flows from, input, process, output and storage, then moves on to looking at how computers can communicate with each other using networks, including the infrastructures created and hardware used.	In this unit, students will learn key programming design skills and how to turn a plan in to a working program using Python and common functions, variables, loops, inputs and outputs.	In this unit, students will develop a portfolio of careers they want to explore in the future. They will look at the essential and desirable skills needed for these careers and create an action plan on how to achieve the skills needed.
Components	Students will learn: • What a computer virus is, in order to understand how they are similar to human viruses in the way that they spread. • What harm viruses can do to computer systems in order to be able to identify and the symptoms of an infected machine. • The main methods that computers viruses use to spread in order to understand how to prevent becoming infected and how to remove viruses. • That there are many different types of viruses, including Trojan, worm, spyware, in order to understand that each is designed to spread and execute in different ways.	Students will learn and understand about: • How you can create graphics in different software using commonly available tools and effects. • How to use drawing tools, including shapes, fill, line, effects etc… to create effective graphics. • Effective use of common keyboard shortcuts, such as copy, paste, save to enhance their productivity when using the computer.	Students will learn: • How all computer systems are structures and made up of hardware and software in order to understand the differences between the two, and how all data flows through a system in order to understand that all computers use the same principles of Input, Process, Output and Storage. • What a network is, in order to understand the advantages and disadvantages of using them and the roles that different computers play when connected to networks, such as servers and workstations. • How computers connect to create networks over short and longer distances in order to understand how LANs are created in small areas and WANs over large. • The different ways network devices can be connected to create topologies, such as Ring, Star and Mesh in order to understand the differences, benefits and drawbacks of using each method. • The common network hardware devices that are used to create networks, such as NIC, Hub/Switch, Router, Ethernet Cable and WAP, in order to understand their role on the network, advantages and disadvantages. • How data travels around a network in order to understand how the performance of networks can be influenced by bandwidth, user activity, obstacles, interference and distance.	Students will learn: • The fundamentals of program design and creation, in order to create simple pseudocode and flowcharts for algorithmic problems. • How to create programs using sequencing in order to understand how programs flow to create shapes and change the appearance by adding different commands. • How to use iteration/repeats/loops in order to understand how to refine sections of code to make it more efficient to write. • How to use and create variables and inputs, in order to understand how to store data within a program and take data from a user to use within a program. • How to use and create lists/arrays in order to understand how to store and select and use random items from them within a program. • How to create and use Sub routines/ Functions in order to understand how to use them to create sections of code that can be used multiple times within a program to create more complex systems.	Students will learn: • How to create a portfolio of careers • How to research appropriate careers with the use of online resources • To identify and understand key skills that they will need for future careers • Identify how to create an action plan to improve their current skills and knowledge to ensure that they have the desirable and essential skills and knowledge needed for potential careers
Key knowledge	• What a computer virus is. • How computer viruses can spread. • The harm viruses can do to computer systems. • Methods to prevent computer viruses. • The differences between a number of different viruses.	• Graphics production using different shapes, tools and effects. • Creating different shapes using group and merge. • Use common keyboard shortcuts effectively, e.g. copy, paste etc…	• The differences between hardware and software and identifying each. • How data flows around computer systems and devices that are used. • What a network is including LAN and WAN • Advantages and disadvantages of networks • How computers connect to networks • Different topologies that can be used • Network hardware devices and their roles • How data travels around a network.	• What is an algorithm? • Basic control programs. • How to command an object to complete a task using inputs, variables, outputs etc…	• What is a portfolio? • The differences between essential and desirable
What pupils should already know	In Key Stage 2, students should have been taught to:	In Key Stage 2, students should have been taught to:	In Key Stage 2, students should have been taught to:	In Key Stage 2, students should have been taught to:	In year 7 students should have been taught to:

(prior learning components)	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• Use search technologies effectively 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 content that accomplish given goals.	• 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. • Recognise common uses of information technology. In year 7 students complete a unit of work about computer systems and the fundamentals of computer systems design.	• 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. In Year 7, students have worked with visual programming software (Scratch) to create programs using the fundamentals of programming they will be working with in this Text based programming language.	• Efficiently research key computing related careers • How to use core Microsoft office applications to create a portfolio
Transferrable knowledge (skills)	**Computing Theory** - Year 7 - E-Safety, Year 8 - Computer Systems and Networks, Year 9 - Cyber Security, GCSE Computer Science - Network Security **Digital Literacy** – Digital video composition and effective use of whitespace. Text formatting skills including insert, resize, colour, emphasis, font style, spacing. Image formatting skills including insert, move, resize, remove background, colour, transitions, effects, splitting, trimming.	**Keyboard Shortcuts** – make using computer systems and applications more efficient to improve speed of performing common tasks and improve productivity. **Digital Literacy Skills** – this skill is developed throughout a number of units and covers core skills needed by students to create effective documents for a specific purpose and audience across all subject areas. These skills specifically transfer to R082 Creative iMedia	**Computing Theory** – Year 7 - Computational Thinking: Computer Systems & Types of computers. Year 9 – Cybersecurity. GCSE Computer Science: wired & wireless networks **Digital Literacy** – Document layout skills including composition and effective use of whitespace. Text formatting skills including insert, resize, colour, emphasis, font style, spacing. Image formatting skills including insert, move, resize, remove background, colour.	**Computing Theory** – Programming skills such as designing using pseudocode and flowcharts, writing using sequence, selection, repetition, variables inputs and outputs, and debugging including detecting errors, all transfer through to future programming units in years 9-11.	**Digital Literacy** – Document layout skills including composition and effective use of whitespace. Text formatting skills including insert, resize, colour, emphasis, font style, spacing. Image formatting skills including insert, move, resize, remove background, colour.
Key vocabulary pupil will know and learn	Malware, Virus, Trojan, Worm, Spyware, Replicate, Download, Anti-Malware, Email Attachment, Update, Corrupt, Slow-Down/ Freeze, Crash, Computer Misuse Act 1990.	Keyboard Shortcut, Ctrl + C, Ctrl + V, Ctrl + P, Ctrl + S, Ctrl + B, Ctrl + U, Ctrl + I, Ctrl + Z, Ctrl + O, Ctrl + N, Shapes, WordArt, Fill Colour, Outline, Effects, Input Device, Output Device, Monitor, Keyboard, Mouse, Printer, Scanner.	Computer Systems, Hardware, Software, Input, Process, Output, Storage, Computer network, LANs, WANs, Share, Client, Server, Workstation, Topology, Ring, Star and Mesh, NIC, Hub/Switch, Router, Ethernet Cable, WAP, Bandwidth, Users, Obstacles, Interference, Distance, the Internet, WWW, Data Packets, Packet Switching.	Python, Turtle, Sequence, Algorithm, Pseudocode, Step, Turn, Repeat, Idle, import, turtle.forward, turtle.left, turtle.right, turtle.shape, turtle.color, turtle.bgcolor, turtle.penup, turtle.pendown, turtle.pencolor, turtle.pensize, Variable, Input, String, Integer, Function, for i in range.	Portfolio, essential, desirable, careers, transferable skills
Assessment activities	Starter and plenary mini assessments Use of online assessments (forms, Kahoot, quizizz) Viruses and Malware video	Starter and plenary mini assessments Use of online assessments (forms, Kahoot, quizizz) Keyboard Shortcuts Poster Computer Hardware Graphics	Starter and plenary mini assessments Use of online assessments (forms, Kahoot, quizizz) End of unit Knowledge Assessment Networks Presentation	Starter and plenary mini assessments Use of online assessments (forms, Kahoot, quizizz) Python programming evidence presentation Created Python programs	Starter and plenary mini assessments Careers portfolio evidence
Resources available	• Lesson Resources: I:\Maths and Computing\ICT\KS3\Year 8\ 8.2 Computer viruses • Topic Checklist Book Sticker • SOW: I:\Maths and Computing\ICT\Curriculum • KS2 NC information - National Curriculum - Computing key stages 1 to 2 (publishing.service.gov.uk) • BBC Bitesize: ○ E-Safety	• Lesson Resources: I:\Maths and Computing\ICT\KS3\Year 7\7.3 ICT Productivity Skills • Topic Checklist Book Sticker • SOW: I:\Maths and Computing\ICT\Curriculum KS2 NC information - National Curriculum - Computing key stages 1 to 2 (publishing.service.gov.uk)	• Lesson Resources: I:\Maths and Computing\ICT\KS3\Year 8\8.1 Networks • Topic Checklist Book Sticker • SOW: I:\Maths and Computing\ICT\Curriculum • KS2 NC information - National Curriculum - Computing key stages 1 to 2 (publishing.service.gov.uk) • BBC Bitesize: ○ Computer systems ○ Introduction to networks	• Lesson Resources: I:\Maths and Computing\ICT\KS3\Year 8\ 8.6 Python Turtle • Topic Checklist Book Sticker • SOW: I:\Maths and Computing\ICT\Curriculum • KS2 NC information - National Curriculum - Computing key stages 1 to 2 (publishing.service.gov.uk) • BBC Bitesize: ○ Computer systems •	• Total jobs: Jobs are our job | Totaljobs • Indeed: Job Search | Indeed
Notes **Why this topic is important…**	Computer viruses can disrupt system performance, which can deplete computer memory and cause frequent computer crashes. Some viruses are sneaky and can infect your system without you ever knowing. Knowing the symptoms of a virus can help you save your computer before it's too late.	Being able to get the most out of software tools and facilities is important from a productivity and creativity perspective. These are tools and facilities that could be used across different curriculum areas and understanding how to get the most out of these tools and techniques can lead to improved document creation. Speeding up student working using common keyboard shortcuts can lead to greater proficiency in completing tasks. Understanding how to create digital graphics within different software and the tools that are available leads the students to an understanding of how digital graphics are created and the different ways creators develop these and the different ways that are available to manipulate graphics.	In today's world computers and networks have become an integral part of our lives, including the business sector for professional activities. As technologies have evolve computer networks will play a greater role in everyday lives and their importance and reliability will continue to grow. Understanding how networks work and allow us to perform our day to day lives is a key skill that every student needs.	Programming is a basic literacy in the digital age, and students need to understand and work with the technology around them. Learn programming prepares them for the future and can help with communication, creativity, math, writing, and confidence. As they learn to program, they learn that there is no one way to do something even if their way didn't work and can develop problem solving and resilience skills without worrying about failing.	Being able to identify potential careers and interests in different industry's will allow students to understand what qualifications, knowledge and skills they will need. This will support students in year 9 when choosing their options as they will already have the basic understanding of which qualifications will best match careers they are interested in.