



KEY STAGE 3 – YEAR 10 – NON- GCSE COMPUTER SCIENCE

CURRICULUM MAP

Autumn Term		Spring Term		Summer Term	
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	Key Themes
An introduction to online safety	An introduction to online safety	An introduction to online safety	The importance of work experience, what to do, how to conduct yourself. Legal implication for all involved.	What is a CV? Why is it necessary? What should be included?	What are apprenticeships? How to find them and how to go about applying.
Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks
<p>Presentation Document 'Online Safety Assessment Sheet'</p> <p>Online safety questionnaire 'A3 Worksheet – Questionnaire'</p>	<p>Presentation Document 'Online Safety Assessment Sheet'</p>	<p>Online Safety Assessment Sheet'</p> <p>Online safety questionnaire 'A3 Worksheet – Questionnaire'</p>	<p>Production of a "statement of intent" outlining how each pupil will go about finding appropriate work experience</p>	<p>Completion of a creditable CV in a recognisable format.</p>	<p>Creation of a "cover letter"</p>



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SCHEME OF WORK

Autum Half Term One: Key Theme – Online Safety					
Intent (weekly outline)	Intent (weekly outline)	Implementatio n (T and L Pedagogy / components used)	Impact (Mastery Statement)	Powerful Knowledge (keywords and terminology)	Personal Development Links
Lesson 1: An introduct ion to online safety	This lesson is designed to set the context in which online safety will be discussed and get learners considering their own online safety. In it, learners will be introduced to the online security threats that feature in this unit. Learners will engage critically with these concepts by considering the level of threat each poses. In small groups, they will then be asked to consider how exposed typical online behaviour is to online security threats. Finally, they will use their own experience to discuss how to protect themselves from online safety threats.	Paired work group work Evaluation analysis problem solving Practical Work experiments Presentations Reading grammar vocab Questionnaire	In this unit, learners will evaluate the online world and their own internet activity for safety concerns and equip themselves with tools for protecting their online identities.	Online safety Online reputation Big data Data Data minig Feasible Visualise Data collection Data analysis Global data	Online safety Character Behaviour Citizenship Staying safe online
Lesson 2: Online reputatio n	Learners will be asked to characterise why someone might use the internet and how their online needs change over time. This task will be used to discuss why it might be important to think about their online reputation even when they are still in school. In small groups, learners will be asked to consider different possible attackers and why they might want to damage someone’s online reputation. They will then be asked to come up with strategies on how best to defend their reputation against these attacks. After a class discussion in which different ideas are shared and consolidated, learners will be asked to produce a poster or leaflet that provides information for others on how to protect their online reputation.				
Lesson 3: Big data	In this lesson, learners will be introduced to the concept of big data and learn how it is used and why. They will be tasked with identifying what data they create online is of interest to organisations that analyse big data and determining how it could be used. Through a classroom				



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	debate, learners will share their thoughts on the ethics of big data use and develop an opinion on the role it should play in society.				
Lesson 4: Right to privacy	Having learnt about what kinds of data are being collected online, learners are now presented with the topic of privacy. In this lesson, learners will discover and discuss their rights to privacy in the UK. Learners will be presented with UK laws such as Article 8 of the Human Rights Act, the Investigatory Powers Act (2016), and the Data Protection Act (2018), as well as the terms and conditions of social media platforms. These will inform a class discussion in which learners will decide whether they think their privacy rights are being upheld. Learners will then consider the different possible levels of privacy rights and how they think they should be set for society.				

Autum Half Term Two: Key Theme – Online Safety					
Intent (weekly outline)	Intent (weekly outline)	Implementatio n (T and L Pedagogy / components used)	Impact (Mastery Statement)	Powerful Knowledge (keywords and terminology)	Personal Development Links
Lesson 5: Data protectio n	<p>The theoretical right to privacy is one thing, but ensuring it in practice is another. In this lesson, learners will determine how their data might be stolen, and why. They will then learn how to protect their data from attack.</p> <p>Building on discussions from previous lessons, learners will first be asked to determine what data they have created or shared online might be valuable, and to whom. They will then be invited to share their own knowledge on how this data could be stolen. After this knowledge sharing, learners will be presented with a series of online attacks such as phishing scams, ransomware, and malware to help formalise their knowledge. Learners will then discuss how they can protect themselves from such attacks and create a script for an online public service announcement that warns users about the threats of malware.</p>	Project Work paired work group work Evaluation analysis problem solving Descriptive Practical Work Presentations Reading grammar vocab	In this unit, learners will evaluate the online world and their own internet activity for safety concerns and equip themselves with tools for protecting their online identities.	Data Data minig Feasible Visualise Data collection Data analysis Global data	Online safety Citizenship Careers education – employability skills Character Behaviour



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Lesson 6: Fake news	In this lesson, learners will initially be presented with examples of fake and real news and asked to guess which is which. This will be used to have a discussion on the definition of fake news and whether it is always easy to determine whether something can be categorised as fake. They will then discuss who creates fake news and for what purpose. This discussion will be facilitated by some key case studies that appeal to both sides of the political spectrum. The lesson will conclude with an activity on identifying fake news.				
Lesson 7: Illegal content	In this lesson, learners will first be given some context and examples of what types of content are illegal in the UK, for example websites that facilitate the trade of illegal items, or contain hate speech, terrorist content, or obscene content. They will learn about laws in the UK such as the Digital Economy Act (2017), the Malicious Communications Act (1988), etc. (As opposed to teaching all the laws, the purpose will be to convey that, in the UK, the internet is governed by a piecemeal collection of context-specific laws.)				

Spring Half Term One: Key Theme – Online Safety					
Intent (weekly outline)	Intent (weekly outline)	Implementation (T and L Pedagogy / components used)	Impact (Mastery Statement)	Powerful Knowledge (keywords and terminology)	Personal Development Links
Lesson 8: Right to access	Not all internet regulation is the removal of illegal content; some of it may instead be considered censorship. In this lesson, learners will build on their previous discussion of the difficulties in regulating online content, but this time they will focus on how to decide what should and should not be illegal. They will compare the UK context to that of other countries and debate the rights that individuals should have to access content online.	Project Work paired work group work Evaluation problem solving Presentations Reading grammar vocab	In this unit, learners will evaluate the online world and their own internet activity for safety concerns and equip themselves with tools for protecting their online identities.	Rights to access Filter bubble Misinformation	Staying safe online Citizenship Careers education – employability skills Character Behaviour
Lesson 9: The	In this lesson, learners will be introduced to the concept of the bubble. They will be asked to draw on their knowledge from the lesson on big				



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bubble	data to describe how bubbles might form. This will be illustrated with an exercise in which they recreate the algorithms that reinforce social media bubbles. From this exercise, learners will be asked to discuss why bubbles might be harmful but could also be a positive thing. To do this, they can be prompted with previous topics like fake news and illegal content. Finally, learners will reflect on if they themselves are in a bubble, how they could get out of it, and whether they want to.	Unit test Assessed task homework			
Lesson 10: Protecting myself online	<p>In this final lesson, learners will develop a raft of protection measures they can enact online.</p> <p>First, learners will be asked to summarise their learning by listing the threats and online safety concerns introduced in the course. Then they will create a list of the ways they want to use the internet. Using the material from previous lessons, they will design a ten-step guide to staying safe online that will help them achieve their online goals in a safe manner. The lesson will conclude with a debate on the topic 'The internet is too dangerous to use', to remind students that online spaces can be useful, but their users must be prepared.</p>				

Spring Half Term Two : Key Theme -					
Intent (weekly outline)	Intent (weekly outline)	Implementation (T and L Pedagogy / components used)	Impact (Mastery Statement)	Powerful Knowledge (keywords and terminology)	Personal Development Links



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Summer Half Term One: Key Theme -					
Intent (weekly outline)	Intent (weekly outline)	Implementation (T and L Pedagogy / components used)	Impact (Mastery Statement)	Powerful Knowledge (keywords and terminology)	Personal Development Links

Summer Half Term Two: Key Theme –				
Intent (weekly outline)	Implementation (T and L Pedagogy / components used)	Impact (Mastery Statement)	Powerful Knowledge (keywords and terminology)	Personal Development Links



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MASTERING	Use function, procedures to improve the maintainability of the programs they create	Visualise a data set Visualise a data set Analyse visualisations to identify patterns, trends, and outliers Draw conclusions and report findings	How sound can be sampled and stored in digital form The effect of sample rate, duration and bit depth on: <ul style="list-style-type: none">• The playback quality• The size of a sound file Calculate file sizes of sound, images and text files sound file size = sample rate x duration (s) x bit depth	Threats posed to devices/systems Knowledge/principles of each form of attack including: <ul style="list-style-type: none">• How the attack is used• The purpose of the attack Understanding of how to limit the threats posed Understanding of methods to remove vulnerabilities Knowledge/principles of each prevention method: <ul style="list-style-type: none">• What each prevention method may limit/prevent• How it limits the attack	Implement a physical computing project, while following, revising, and refining the project plan Implement a physical computing project, while following, revising, and refining the project plan	Complete Task 3



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SECURING	Use iteration (while statements) to control the flow of program execution	Identify the steps of the investigative cycle	Recall that sound is a wave	Critique online services in relation to data privacy	Design a physical computing artifact purposefully, keeping in mind the problem at hand, the needs of the audience involved, and the available resources	Complete Task 2
	Perform common operations on lists or individual items	Identify the data needed to answer a question defined by the learner	Explain the function of microphones and speakers as components that capture and generate sound	Explain the need for the Data Protection Act	Decompose the functionality of a physical computing system into simpler features	
	Perform common operations on strings or individual characters	Create a data capture form	Define key terms such as 'sample', 'sampling frequency/rate', 'sample size'	Implement strategies to minimise the risk of data being compromised through human error		
	Use iteration (for statements) to iterate over list items	Describe the need for data cleansing	Describe how sounds are represented as sequences of bits	Define hacking in the context of cyber security		
	Perform common operations on lists or strings	Apply data cleansing techniques to a data set	Calculate representation size for a given digital sound, given its attributes	Explain how a DDoS attack can impact users of online services		
	Use iteration (for loops) to iterate over lists and strings		Explain how attributes such as sampling frequency and sample size affect characteristics such as representation size and perceived quality, and the trade-offs involved	Explain the need for the Computer Misuse Act		
	Use variables to keep track of counts and sums			Examine how different types of malware causes problems for computer systems		
	Combine key programming language features to develop solutions to meaningful problems		Perform basic sound editing tasks using appropriate software and combine them in order to solve more	Question how malicious bots can have an impact on societal issues		
			Compare security threats against probability and the			



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			<p>complex problems requiring sound manipulation</p> <p>Recall that bitmap images and pulse code sound are not the only binary representations of images and sound available</p> <p>Define 'compression', and describe why it is necessary</p>	<p>potential impact to organisations</p> <p>Explain how networks can be protected from common security threats</p>		
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DEVELOPING	Write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements	Define data science	Describe how digital images are composed of individual elements Recall that the colour of each picture element is represented using a sequence of binary digits	Identify what happens to data entered online	List the micro:bit's input and output devices	Complete Task 1
	Use selection (if-elif-else statements) to control the flow of program execution	Explain how visualising data can help identify patterns and trends in order to help us gain insights	Recognise how human errors pose security risks to data	Recognise how human errors pose security risks to data	Use a development environment to write, execute, and debug a Python program for the micro:bit	
	Locate and correct common syntax errors	Use an appropriate software tool to visualise data sets and look for patterns or trends	Describe how an image can be represented as a sequence of bits	Identify strategies to reduce the chance of a brute force attack being successful	Write programs that use the micro:bit's built-in input and output devices	
	Create lists and access individual list items	Recognise examples of where large data sets are used in daily life	Define key terms such as 'pixels', 'resolution', and 'colour depth'	List the common malware threats	Write programs that use the micro:bit's built-in input and output devices	
	Perform common operations on lists or individual items	Select criteria and use data set to investigate predictions	Describe how colour can be represented as a mixture of red, green, and blue, with a sequence of bits representing each colour's intensity	Identify the most effective methods to prevent cyberattacks	Write programs that use GPIO pins to generate output and receive input	
		Evaluate findings to support arguments for or against a prediction	Compute the representation size of a digital image, by multiplying resolution (number of pixels) with colour depth (number of bits used to represent the colour of individual pixels)		Write programs that communicate with other devices by sending and receiving messages wirelessly	
		Define the terms 'correlation' and 'outliers' in relation to data trends				
		Identify the steps of the investigative cycle	Describe the trade-off between representation size and perceived			
		Solve a problem by implementing steps of				



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	<p>the investigative cycle on a data set</p> <ul style="list-style-type: none">• Use findings to support a recommendation	<p>quality for digital images</p> <p>Perform basic image editing tasks using appropriate software and combine them in order to solve more complex problems requiring image manipulation</p> <p>Explain how the manipulation of digital images amounts to arithmetic operations on their digital representation</p> <p>Describe and assess the creative benefits and ethical drawbacks of digital manipulation (Education for a Connected World)</p>			
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