Computer Science

Year 8 Curriculum Map

	Year 8 – Autumn Term
Prior Learning	It is essential for the future of our pupils that they have a good understanding of cyber security and keeping themselves safe on social media. This unit is providing the fundamental knowledge required for pupils of this age. Social media is legally available to our pupils at this age, it is important they understand how to protect themselves and their peers when socialising online with information of how to access support for potential online issues.
What will I learn?	**Cyber security-** This unit of work aims to teach learners the fundamentals of staying safe online. Pupils begin to understand the key terms of cyber security and explain the common cyber security threats. Pupils then move on to learn about the way we can keep our computer and data safe from these threats. This unit works well as a class discussion as most students will be familiar with some of these topics from their own personal experiences. As part of this unit, pupils create an interactive presentation which will also help our pupils to develop their ICT skills in a range of applications. **Social media-** Pupils will learn how they can keep themselves and peers safe on social media with reference to the whole school safeguarding policy. This topic will highlight where our pupils can access support for any issues which may arise from using social media. The intent here is to develop pupils' skills, knowledge and understanding of how social media operates and the hidden dangers faced by inexperienced users. This unit aims to teach learners a range of ways they can use technology safely, respectfully, responsibly and securely. Recognise inappropriate content and the importance of reporting concerns. The pupils will design their own online safety movie or booklet to enhance their ICT skills in multiple applications. The rationale behind studying this in autumn term 1 is due to the fact that pupils will be reaching an age where they can legally access social media sites and applications.
How will I be assessed?	**Practical and Formal Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment** - will take place as part of recall and retrieval practice, low stakes testing, self and peer assessment to identify gaps in knowledge, monitoring and tracking progress throughout.
Next Steps	The prior learning in year 8, provides pupils with the fundamentals to access key topics in year 9 and year 10. These are linked to the impacts of digital technology delivered in year 9, as long with 1.4 network security and 1.6 ethical, legal and delivered in year 10.
Opportunities for Independent Learning	https://www.ceop.police.uk/Safety-Centre/- Guides and support for pupils. https://saferinternet.org.uk/- Guides for pupils and parents https://www.childnet.com/- Further research into staying safe online. https://www.cryptoclub.org/ Explores the history of using encryption Office 365 – Available for free for home use on up to 5 devices.
Personal Development and CEIAG	**PSHCE** - Pupils will experience links to the PSCHE curriculum through the unit social media. This unit links to the PSHCE 'online and the media', managing risk and relationships. Through the delivery of 'Social Media' the pupils will be taught the benefits and positives of using social media, the risks of online relationships, how to safely share media online and strategies to identify risks online. **SMSC** - Pupils will also examine developing skills and aspirations that lead to career and further education opportunities for Computer Science. Pupils will also experience and have the opportunities to learn about the 'Rule of Law', 'Individual Liberty' and 'Mutual Respect', reinforcing SMSC into the Computer Science curriculum.

	Pupils will study and develop the skills needed for future careers. Pupils will need to be 'work-ready' particularly for the future jobs and careers that don't yet exist! **Computing Starters**: To highlight possible career opportunities that are available in Computing/ICT. **Career Focus:** A question for pupils in year 8 to ask themselves is where Computer Science can take them in terms of a future career. Possible careers can include positions in application development, user interface designer, web developer or any aspect of science, technology, engineering or maths-based careers. **Further Education Focus:** Vocational courses include Games Design, Computing and Media and Creative Digital Media.
Enrichment Opportunities (Cultural Capital)	Throughout year 8, pupils will have access to computing devices, technology and out of school-based learning. The Computer Science department intends to focus on the most disadvantaged allowing access to technology that they would not normally have access to. **Computer Science Club** – Lunchtime activities to build coding skills. **Virtual Reality** – Focusing on the programming behind immersive gaming experiences. **Cyber Security Lab** - https://www.pbs.org/wgbh/nova/labs/lab/cyber/ The following movies and TV Shows will further enhance the knowledge and understanding of key topic areas: • TRON • TRON Legacy

	Year 8 – Spring Term
Prior Learning	Prior learning of basic computer components is essential with most pupils understanding this from the key stage 2 curriculum. Bridging the gap at the start of year 7 particularly in the topic School Systems Training, however, key computer vocabulary will be used throughout year 7. The computer hardware and software unit links itself to the understanding of how computers process information- binary. Data representation will be a new topic to the pupils in which they will have no prior knowledge about. For this topic, pupils will require an understanding.
What will I learn?	**Computer Hardware and Software-** The interaction and integration of computers and computing devices and how these have impacted on daily lives. It is essential that learners know and understand the fundamentals of computing devices and how these are put together and the importance of digital communication devices. **Data Representation- Binary-** This unit is designed to expose pupils to the mathematical and arithmetic aspects of computer science. The curriculum intent for these particular topics is to introduce data representation, memory, storage and computational thinking, applying mathematical skills, knowledge and understanding fundamental to Computer Science.
How will I be assessed?	**Practical and Formal Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment** - will take place as part of recall and retrieval practice, low stakes testing, self and peer assessment to identify gaps in knowledge, monitoring and tracking progress throughout.
Next Steps	Computer hardware and software will be revisited in year 10 for those taking Computer Science as a GCSE in the topic 1.1 Systems Architecture. This topic requires the prior knowledge computer components. Year 10 will also include 1.2. memory and storage, it is useful for pupils to understand input and output devices to understand how data

	transfers through a computer. Both year 10 topics also require the basic knowledge and understanding of data representation. Data representation will also be revisited in Year 9 under the topic Boolean logic and hexadecimal. In this topic they will extend their knowledge of binary and transfer the mathematics of this topic to the understanding of converting binary and denary numbers to hexadecimal.
Opportunities for Independent Learning	https://scratch.mit.edu/projects/723745/- Binary to denary practice http://courses.cs.vt.edu/~cs1104/Bingo/bingo.kevin.html- Binary to denary practice through a game of bingo https://games.penjee.com/binary-numbers-game/- Binary to denary practice The department also provides access to a range of resources, posted on Synergy for pupils to access and continue their independent learning. https://fishermore.schoolsynergy.co.uk/
Personal Development and CEIAG	**PSHCE** - Pupils will experience links to the PSCHE curriculum through the unit social media. This unit links to the PSHCE 'online and the media', managing risk and relationships. Through the delivery of 'Social Media' the pupils will be taught the benefits and positives of using social media, the risks of online relationships, how to safely share media online and strategies to identify risks online. **SMSC** - Pupils will also examine developing skills and aspirations that lead to career and further education opportunities for Computer Science. Pupils will also experience and have the opportunities to learn about the 'Rule of Law', 'Individual Liberty' and 'Mutual Respect', reinforcing SMSC into the Computer Science curriculum. Pupils will study and develop the skills needed for future careers. Pupils will need to be 'work-ready' particularly for the future jobs and careers that don't yet exist! **Computing Starters**: To highlight possible career opportunities that are available in Computing/ICT. **Career Focus:** A question for pupils in year 8 to ask themselves is where Computer Science can take them in terms of a future career. Possible careers can include positions in application development, user interface designer, web developer or any aspect of science, technology, engineering or maths-based careers. **Further Education Focus:** Vocational courses include Games Design, Computing and Media and Creative Digital Media.
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	Year 8 – Summer Term
Prior Learning	The delivery of the HTML unit of work requires pupils to have experienced the pre-requisite of Scratch and Python programming courses through year 7 and year 8. Added to this prior learning, pupils will use recall and retrieval practice from the Cyber Security and Social Media units of work. Pupils are required to design web pages based on these topic areas. The HTML unit of work is designed to allow pupils to interleave with units of work previously studied in year 7 and year 8.

What will I learn?	**Python Programming – Developing** Pupils will build on the knowledge gained from the topic Python- introduction covered in year 7. Using their basic understanding of python, pupils will learn about data types and selection. Creating programs which have a range of outputs based on the date entered by the user. Pupils will be working on their ability to problem-solve while creating their python programs. **HTML – Web Design** Pupils will understand the difference between HTML and CSS and create basic web pages. Pupils will apply the skills, knowledge and understanding from previous units of work in Year 7 and Year, incorporating Scratch, Kodu, Python, Cyber Security and Social Media in the creating and extend your knowledge to create a basic social networking homepage.
Next Steps	Python programming will be revisited in year 9 and year 11 where pupils will learn how to make efficient programs using iteration, subroutine and functions. The fundamental programming skills learnt over year 7 and 8 are transferrable across all programming languages. Therefore, the knowledge gained through HTML and CSS, block-based programming and python will allow our pupils to solve programming problems in a range of languages.
How will I be assessed?	**Practical and Formal Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment** - will take place as part of recall and retrieval practice, low stakes testing, self and peer assessment to identify gaps in knowledge, monitoring and tracking progress throughout.
Opportunities for Independent Learning	Notepad - Free with Windows operating system, allowing pupils to write in HTML code. Office 365 – Available for free for home use on up to 5 devices. https://hourofcode.com/ccplay - Develop python programming skills https://hourofcode.com/cocom - Develop python programming skills https://hourofcode.com/cocomarcade - Develop python programming skills https://hourofcode.com/codehsturtle - Develop python programming skills
Personal Development and CEIAG	**PSHCE** - Pupils will experience links to the PSCHE curriculum through the unit social media. This unit links to the PSHCE 'online and the media', managing risk and relationships. Through the delivery of 'Social Media' the pupils will be taught the benefits and positives of using social media, the risks of online relationships, how to safely share media online and strategies to identify risks online. **SMSC** - Pupils will also examine developing skills and aspirations that lead to career and further education opportunities for Computer Science. Pupils will also experience and have the opportunities to learn about the 'Rule of Law', 'Individual Liberty' and 'Mutual Respect', reinforcing SMSC into the Computer Science curriculum. Pupils will study and develop the skills needed for future careers. Pupils will need to be 'work-ready' particularly for the future jobs and careers that don't yet exist! **Computing Starters**: To highlight possible career opportunities that are available in Computing/ICT. **Career Focus:** A question for pupils in year 8 to ask themselves is where Computer Science can take them in terms of a future career. Possible careers can include positions in application development, user interface designer, web developer or any aspect of science, technology, engineering or maths-based careers. **Further Education Focus:** Vocational courses include Games Design, Computing and Media and Creative Digital Media.
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	Virtual Reality – Focusing on the programming behind immersive gaming experiences. **Cyber Security Lab** - https://www.pbs.org/wgbh/nova/labs/lab/cyber/ The following movies and TV Shows will further enhance the knowledge and understanding of key topic areas: • Bicentennial man • The Mitchells vs Machines